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ELEMENTS

OF THE

THEORY AND PRACTICE

OF

MEDICINE;

DESIGNED FOR THE

USE OF STUDENTS AND JUNIOR PRACTITIONERS.

BY

GEORGE GREGORY, M.D.

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GENERAL DISPENSARY.

"Ratio nisi studia dirigat, studia rationem non perficient."—BAGLIVI.

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TO

SIR JAMES M'GRIGOR, BART.,

M.D. F.R.S. AND K.C.T.S.

DIRECTOR-GENERAL OF THE MEDICAL DEPARTMENT OF THE ARMY, &c. &c.

My dear Sir James,

A warm admiration of your unceasing and successful efforts to uphold the character of the medical department of the Army, and a grateful recollection of many acts of personal kindness, were the motives which prompted me to place the former editions of this work under your auspices; and they operate now with that increased force which new obligations, a longer tried friendship, and accumulated claims to respect, create. It has been my study, by careful revision, to render this volume more worthy of your patronage, and of those flattering recommendations of the work which you have been pleased to express officially. To be held up as a guide to the Junior Medical Officers of the Army in the discharge of their arduous duties, is an honour of which I may justly be proud, and which my utmost efforts have been exerted to deserve.

I gladly seize the opportunity thus afforded to me of gratefully acknowledging such favours, to avow the high respect and esteem with which I am,

Dear Sir James,

Your very faithful and obliged humble servant,

GEORGE GREGORY.

31, WEYMOUTH-STREET,
JAN. 28, 1835.

PREFACE.

THE object of the author, in the following pages, is to lay before the student an outline of the theory and practice of medicine, unbiassed by attachment to any professed principle, and to delineate those views of pathology which appear to direct the reasonings, and to give a tone to the language, of medical writers at the present period. The general design of the volume coincides very nearly with that of Dr. Cullen's First Lines, a work which, for perspicuity of description, acuteness of reasoning, and elegance of language, will probably long continue unrivalled, and which, for its various merits, is justly classed among the standard classical works in medicine. It cannot be concealed, however, that many of the theoretical speculations in which Dr. Cullen indulged are in a great measure forgotten; that much which he thought important is now neglected, and much that he neglected has since risen into consequence. This must ever be the fate of medical authors, and their productions. In the progress of years, new views of disease will naturally arise, and the general aspects of the science be materially altered.

Forty-five years have elapsed since the death of Dr. Cullen, during which long period, a general spirit of improvement has pervaded every branch of medi-

[illegible] ave taken place in [illegible] ing the origin of [illegible] them, their seats, and [illegible] may be called the great [illegible] here that we shall find [illegible] modern medicine may boast. [illegible] that improvements in pathology [illegible] by corresponding changes [illegible] disease. These, it has long [illegible] continued nearly the same through [illegible] logical doctrine. It is enough to [illegible] of medicines do not necessarily [illegible] powers of the human mind in [illegible] causes, and tracing the relations of

[illegible] *disease.*—Great additions have been [illegible] Cullen's time to our stock of knowledge [illegible] the sources of disease, both those which are [illegible] the frame, and those which have their seat [illegible] the human body itself. The doctrine of morbid [illegible] miasma, and contagion, has been much extended; [illegible] perhaps there is no branch of pathology which is [illegible] in so defective a state. The remarkable differences [illegible] opinion entertained on all questions of contagious influence, are but little creditable to an age which may boast of such precision in other departments of the science. Two diseases unknown to Dr. Cullen have sprung into notice since his time; namely, Cow-pox, and malignant Cholera. With regard to those sources of disease which exist within the frame itself, we may specify the following as being little, if at all, known to the writers of Cullen's age: spinal irritation; disease of the brain leading to purulent deposits; spontaneous inflammation of veins and arteries; and the several [illegible] of [illegible] heart

2. *Detection of disease.*—Much has been done, especially during the last twenty years, towards the more accurate detection of disease. Some progress has been made in the minute diagnosis of diseases of the brain, but it is in the disorders of the thoracic viscera where this great improvement is most manifest. The several diseases of the heart and lungs are now distinguished with an accuracy which would have surprized the most experienced physicians of former times, though one of them (Baglivi), possessed of more than ordinary sagacity, foresaw its possibility.[*] For the original discovery of the healthy murmur of respiration, and of the several modifications which it undergoes during disease of the chest, we are indebted to the acuteness and patient observation of Laennec. To the same enlightened pathologist we owe much of our knowledge regarding the sounds which issue from the heart during disease. This branch of the great subject of medical acoustics is, however, still in its infancy.

3. *Seats of disease.*—The next great feature distinguishing the pathology of the present day from that of Dr. Cullen is a more accurate knowledge of the primary seats of disease. This improvement in medical science is chiefly attributable to the labours of Bichat, whose works (Anatomie Generale and Traité des Membranes) presented new and comprehensive views of the animal economy, which were obviously fitted to become the basis of pathology, by illustrating the origin of disease in the several tissues or structures of the body. The original ideas of Bichat and Carmichael Smyth have been much extended and improved of late years, and their recent application to ophthalmia furnishes

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[*] "Quare non id agunt medici, ut investigent situm ulceris pulmonum, eoque detecto sectionem inter costas instituant, rationem sane non agnosco."—*Baglivi de Praxi Medica*, lib. 2, cap. xi.

cine, and many import [illegible] increased precision given
the opinions entert [illegible] elementary textures.
diseases, the modes of [illegible] The principal additions
effects. These con [illegible] our knowledge of diseases
body of patholog [illegible] must, however, be mainly
those improvem [illegible] attention which has been paid
Nor must it be [illegible] by means of it, the effects and
logy are nece [illegible] have been much more clearly deve-
in the meth [illegible] cases the primary seats of disease
been obse [illegible] ascertained.
every va [illegible] ent in modern pathology may be con-
say, t [illegible] mencing with Dr. Baillie, who succeeded
keep [illegible] the attention of physicians to the study of
in [illegible] more effectually than had been done
[illegible] his laborious but diffuse predecessor in
[illegible] department of science. It must be acknow-
[illegible] the same time, that the example thus set has
[illegible] gently followed in France; and to the zeal of
[illegible] pathologists, and the abundant opportuni-
[illegible] afforded by the French Hospitals, we are chiefly
[illegible] for the increased amount and accuracy of our
information regarding the changes of structure effected
by disease.

To such an extent has this study been lately followed, that the term pathology has been, by some, considered as identical with morbid anatomy, and the attention of students has been fixed upon the dissecting-room, as if the elements of pathology could there only be properly studied. This, however, (as a most able writer and acute pathologist* has recently pointed out,) is a manifest error in science. The alterations in structure produced by disease are only one of the elements of our reasoning on the nature of diseased actions. Many others are equally necessary to their elucidation, such as the external causes of disease, the nature of the leading symptoms, their consequences, local and general, and the effects of remedies. These severally furnish the proper elements of that inductive reasoning, by which we determine those laws of the animal economy which it is the object of pathological science to unfold.

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* Alison in the "Cyclopædia of Practical Medicine." Appendix, p. lxxxvii.

It is also, as the same author observes, a great practical error to fix the attention of students too exclusively upon the *effects* of disease, because in many instances their characters during life are not perceived until the latest and least remediable stage of the disease. The most important part of the history of a disease is that group or assemblage of symptoms by which its nature and seat may be known before any decided læsion of structure has taken place, for this is the season of successful practice, and the mind of the physician should never be diverted from those primary objects of his pursuit, the power of remedies, and their application during life, to controul diseased actions, or to relieve the urgency of particular symptoms.

In preparing the present edition for the press, the author has kept these principles before him. It has been his object to give to each division of the subject its fair share of attention, neither exaggerating on the one hand the importance of pathological anatomy, nor insensible, on the other, to the many advantages which medical science has reaped from its study, more especially in the accurate knowledge which it gives of the nature and succession of diseased actions.

It would be superfluous to specify in detail the several alterations which have been made in this edition, with the view of bringing the work up, as far as possible, to the standard of modern theory and practice.

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THE
THEORY AND PRACTICE
OF
MEDICINE.

INTRODUCTION.

General view of the subject. Natural divisions of diseases. Investigation of disease. History. Pathology. Treatment. Of General Pathology. Criticism on Dr. Cullen's Nosology. Division into acute and chronic diseases.

The diseases of the human body being very numerous, it becomes highly important to make such an arrangement of them as may assist the memory, and if possible contribute to a clearer comprehension of their analogies and peculiarities. The first and most simple distinction among diseases is founded upon their susceptibility of relief from manual operation. This has led to the division of the science of medicine into the two great branches of Physic and Surgery, which, though for the most part taught and practised separately, are yet so intimately connected, that neither can be appreciated in all its bearings, unless viewed in conjunction with the other. Such a survey points out that the diseases of the external and internal parts of the body are all regulated by the same laws, judged of by the same means, excited frequently by the same causes, and alleviated or removed on the same general principles. Under this impression, it would be unnecessary for me to attempt to define with accuracy the boundaries of Physic and Surgery, which, for all useful purposes, is sufficiently effected by the courtesy of the world.

[illegible] under the particular cogni- [illegible] distinction is into such as [illegible] fever:—that is to say, into [illegible] second is into the *acute* (by [illegible] diseases running a short and [illegible] or such as are lingering and [illegible] third distinction, equally elemen- [illegible] and local diseases;—into those, [illegible] whole system equally partakes, and [illegible] more obviously and immediately upon [illegible] particular organ. These are not to be [illegible] other light than as artificial boundaries; [illegible] may direct the student while in the path [illegible] which may and ought to be neglected when [illegible] advanced. It will hereafter be shown, that [illegible] acute, local and constitutional diseases, are [illegible] in an infinite variety of ways, which it is in [illegible] to unravel by the most ingenious contrivances [illegible] system. It is, in fact, a most important prin- [illegible] pathology, that an intimate connection is established [illegible] the parts of the living system, which must [illegible] baffle every attempt to give a perfect idea of [illegible] by *separate* investigations. With this understand- [illegible] however, thoroughly impressed upon the mind, such [illegible] may safely and advantageously be made the groundwork of a nosological arrangement of diseases, well calculated to elucidate the first principles of the science; and may be taken as the basis of that which is observed in the following pages.

Mode of investigating a disease.—1. An inquiry into any particular disease includes in the first place a detail of the *symptoms* by which it is characterized in its several stages; and in particular of such as serve to distinguish it from other diseases with which it is in danger of being confounded; or to direct the judgment of the physician as to its probable duration and termination; and, lastly, of the appearances found after death. This first branch of the subject, therefore, includes diagnosis and prognosis, and whatever can be learned regarding a disease by *clinical* observation. It constitutes the [illegible] the disease—the *Medicina Prima* of ancient authors.

[illegible] second object of inquiry is the *pathology* of the complaint, by which is to be understood whatever can be made out concerning it by a process of reasoning. It includes an investigation of the *predisposing* and *exciting* causes (ætiology), and of the seat and *nature* of the disease, in as far as they can be ascertained. This is the most abstruse and difficult part of the inquiry; and though, even if successfully prosecuted, it does not *always* lead to practical results, yet in most instances it throws the surest light upon this object of research ; and where it fails to point out the means of relief, often suggests the reason, why that is difficult, tedious, or impossible.

3. The third topic of inquiry in the account of a particular disease is the *treatment.* To this, of course, every other part of the subject must be considered as subordinate. As a general principle of the first importance, I would wish here to inculcate strongly upon the student, that the cure of all diseases must be effected by the powers of the *living system;* and that his remedies are merely to be employed with the view of placing the body under the most favourable circumstances for resisting disease. The general principles upon which the treatment of any disorder is to be conducted can alone find a place in this work. A knowledge of the manner of adapting these to the infinitely varied circumstances under which disease occurs, must be the result of personal experience, as it will be the sure reward of diligent observation.

In an elementary work on the Theory and Practice of Physic, something more, however, is required than a mere detail of the individual diseases to which the human body is subject. They have their points of *analogy* as well as of *dissimilarity;* and it is an object of consequence to determine these analogies, to show the great features of resemblance which all diseases bear, and to trace the almost insensible gradations by which they run into each other, and which enable us, either to view them as separate objects of inquiry, or as the closely connected members of a great family. This beautiful mixture of uniformity and variety in the phenomena of disease presents one of the most formidable obstacles which a work of this nature has to encounter, and it can only be surmounted, and that partially, by occasional digressions into the obscure doctrines of GENERAL PATHOLOGY. Upon these the science of Medicine may be

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of … Dr. Cullen; a work of great value,
th … requent occasion to refer, and to whose
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I … hich I have adopted are such as appear
… ssary, from the improvements which have
… logy since his time. The great features,
… Cullen's system are retained, which being
… observation of the phenomena of disease,
… ntinue for ever to be the surest basis of any
… of THE THEORY AND PRACTICE OF MEDICINE.

PART I.

ACUTE DISEASES.

CLASS I. FEVERS.

CHAP. I.

GENERAL DOCTRINE OF FEVER.

Importance of the Subject. Characters of Pyrexia. Of Rigors and heat of skin. Frequency of Pulse. Loss of muscular power. Other functions disturbed in Fever. Leading divisions of febrile Diseases. Causes of Fever, predisposing and occasional. Nature of Fever. Periodic movements observable in Fever. Doctrine of critical days. Principles of the treatment of Fever.

FEVER is the most important, because the most universal and the most fatal of all the morbid affections of which the human body is susceptible. Its presence characterises a great number of diseases; and in others which are not for the most part attended by it, the physician must always be prepared to expect its occurrence. It is *that*, by the presence or absence of which all his views of treatment are to be regulated, whose rise, progress, and termination, he always watches with the closest attention, and by the degree of which present, he is enabled in a great measure to estimate the danger in each particular case. Some idea may be formed of the great mortality of fever from the statements of Sydenham, who calculated that two-thirds of mankind die of acute diseases properly so called, and two-thirds of the remainder of that lingering febrile disease, consumption. Fever has proved a fertile theme, on which the ingenuity of physicians in all ages has been exerted. Indeed the attention which it has received from every medical author, both ancient and modern, would alone be sufficient to impress upon any one the importance of the doctrines it embraces. How *difficult*, lastly, is the study of fever may be inferred from this, that though so much has been written concerning it, the subject in the whole circle of medical science which still involves so many disputed points. In every view the doctrines of fever must be considered of paramount importance, and they constitute therefore, with great propriety, the foundation of all pathological reasoning.

When a person is suddenly attacked by shiverings or rigors, followed by a hot skin, a quick pulse, and a feeling of languor and lassitude, he is said to have an attack of fever. With such symptoms are usually present also thirst and impaired appetite, restlessness, and diminished secretion. These constitute the six leading symptoms of fever or pyrexia—the characteristic features by which its presence may always be detected. Every function of the body indeed is more or less disturbed, but we select for the *definition of fever* those which are of the most importance in the animal œconomy. The marks of disturbance in them afford the *six characters* of fever just enumerated, and of which we now propose to treat in detail.

CHARACTERS OF PYREXIA.

1. Chilliness, succeeded by increased heat of skin, is the first and leading feature of fever. The chilliness or rigor is sometimes so slight as almost to escape the notice of the patient. At other times it is exceedingly violent, so that he complains bitterly of cold. His teeth chatter. His limbs tremble. The skin is pale, rough, and contracted. The features shrink. A sensation is felt as of cold water trickling down the back. By degrees the chilliness subsides, and begins to alternate with warm flushings. A heat of skin greater than natural succeeds, and with it returns the colour of the skin. The cheeks become even flushed, and the eyes suffused. The features recover their usual size, or appear more turgid than in health. The hot stage of fever is then said to be formed, which may go off in a few hours, as in the case of an ague, or may continue for days or weeks, as in common continued fever.

The duration of the cold stage varies from an hour to two or even three days. Though often very slight, it is perhaps never entirely wanting; and it is at all times to be carefully inquired for and noted by the physician, as marking the precise period of the accession of fever. This it is useful to know in all febrile diseases; but in some, as small-pox and measles, it forms the basis of our prognosis. The coldness of which the patient complains is sometimes, though not always, perceptible to the touch of another, but never to the extent that might have been anticipated from the sufferings and expressions of the patient.

2. The second great feature denoting the presence of fever is an increase in the frequency of the pulse. This is one of the earliest and most constant of all the symptoms of fever, and perhaps would scarcely ever be wanting, but for some accidental circumstance, such as a congestion of the blood in the vessels of the brain or liver. The feverish pulse of an adult varies in point of frequency, from the slightest increase above the natural standard, to that point at which it can with difficulty be numbered.* In forming any judgment of diseases by the frequency of the pulse, great allowance must always be made for the age of the patient—for sex, constitution, and temperament of body—for the kind and period of the disease—for external circumstances; such, for instance, as the state of the air surrounding the patient, and the irritations to which he is exposed—for the effect of diet and medicines—and lastly, under circumstances of great exhaustion, the mere position of the body. The pulse of fever differs from that of health in other points, besides that of comparative frequency. These characters of the febrile pulse are distinguished by the terms hardness, wiriness, fulness, and weakness; but as they are not essential to the existence of fever, they will more properly come under consideration hereafter.

Of these leading characters of fever, rigor, succeeded by heat of skin, and increased frequency of pulse, it is curious to observe what different judgments have been formed. The bulk of mankind have almost uniformly and by common consent laid the greatest stress upon the increased heat of the body, and accordingly all the expressions for *fever* in different languages are derived from words signifying heat or fire. This was for a long time also the doctrine of the schools, Galen having taught that the essence of fever consisted in *præternatural heat.* Boerhaave, who investigated the phenomena of fever with great accuracy, and acknowledged the importance of these leading symptoms, yet imagined that the quickened pulse was the single *essential* symptom of fever, uniformly present from the beginning to the end of the disease, and by which the physician judges of its presence or degree. In this opinion may be traced the early bias in favour of mathematical medicine which distinguished this excellent physician. Dr. Cullen, on the other hand, placed the rigor and shivering in the first rank of febrile symptoms. He imagined that as the hot stage of fever is so constantly preceded by the cold stage, the one was *caused* by the other, and the cause of the cold stage therefore the cause of all that followed in the course of the paroxysm. These opinions we may be allowed to consider as upon a par in point of relative merit. They may all be supported by specious arguments, but we must end by confessing that fever does not consist in *this* or *that* symptom, but in the co-existence and succession of many.

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* For practical purposes it may be advisable for the student to make some rude divisions of feverish pulses. The first may have 84 in a minute for its average, and range between the natural standard and 90. This is the pulse of *common* fever. The second may have 96 for its average, and its range will be from 90 to 100. This is the pulse of *inflammatory* fever. The third 110, ranging between 100 and 120. This is the pulse of *typhoid* fever. The last, which may have 132 for its average, is observed in the advanced stages of *hectic* fever. The utmost limit of frequency at which a pulse can be correctly counted, is 144, being double the number of its healthy pulsations.

3. Among the various evidences of the presence of fever, the loss of muscular power was noticed, marked by the occurrence of languor and lassitude, a sensation of fatigue, and great pain referred to the muscles and joints, particularly of the back and limbs. The patient feels as if beaten with sticks. This striking index of fever was elegantly illustrated by Boerhaave, under the title of *debilitas febrilis.* It is to be distinguished from that weakness of muscle which arises from great exertion, the privation of nourishment, or the violence or long continuance of an evacuation. It is present in a greater or less degree in all fevers, though it bears no proportion to the violence or danger of the disease. It is aggravated by the slightest exertion of muscular power, and in severe cases is but partially relieved by the horizontal posture.

4. Disturbances in the functions of animal heat, circulation, and muscular motion, afford then the most prominent marks of fever; but every other function of the body, animal, vital, and natural, is more or less deranged, and that of the appetites in so remarkable a degree, as to demand particular notice. The appetite for solid food is diminished, while that

for liquids is increased. In severe cases of fever there is an absolute loathing of food, accompanied often with nausea and vomiting. Thirst is one of the most familiar of all the characters of fever, and yet one more frequently wanting than any other. The desire is almost invariably for cold drink, and doubtless this is a beautiful provision of nature. There is no ground whatever for believing with Asclepiades, and the followers of his school, that any danger is to be apprehended from the indulgence of this appetite.

5. The *restlessness and want of sleep* which occur in febrile diseases are characteristic symptoms, which deserve notice. They are seldom wanting in the early stages of fever, and are peculiarly distressing to the patient, often continuing during the whole course of a long fever. If the patient dozes for a time, his dreams are harassing, and he wakes unrefreshed. The return of sleep is one of the surest indications of convalescence.

6. Nothing more strikingly characterizes the presence of fever than a general diminution and depraved state of the secretions all over the body. This is exemplified in the dryness and clamminess of the mouth, and the white and furred tongue, which are so frequently observed in all febrile diseases. The skin is dry and parched from the cessation of cuticular transpiration. The urine is scanty and high coloured. The bowels are generally constipated. The evacuations which may be procured are, for the most part, dark and fœtid, owing, as we may presume, in a great measure, to the diminished quantity and vitiated quality of the bile. These and several other phenomena of fever are referrible to the important general principle now laid down.

The restoration of secretion is generally considered as the test of the decline of fever, and hence it is that in Sauvage's excellent and philosophical definition of fever,* we find the terms *cum madore cutis in declinatione*. This, however, is not applicable unless such change be general over the body. *Occasional* perspirations are rather evidences of the continuance of the febrile state, and as such frequently become the direct guides of our treatment.

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* Pulsus magnitudo et frequentia, cum frigore in insultu, fervore in decursu, madore in declinatione, et semper virium prostratione majori quam a virium vitalium gradu foret expectandum.

Having thus explained the great characters of *pyrexia*, it will be proper to inquire what are the principal divisions of febrile diseases, and to point out generally what are the chief predisposing and occasional (or exciting) causes of fever.

ORDERS OF PYREXIÆ.

A very superficial observation of nature is sufficient to point out the first distinction among febrile diseases, I mean that into *idiopathic* and *symptomatic*. Fever is often observed to arise without any very obvious cause, and the patient is then said to have idiopathic fever. When it occurs after an injury, or when it is coupled with redness of the throat, or acute pain of the side, he is said to have symptomatic fever. It requires a more extended observation of the phenomena of disease to perceive the leading divisions of *idiopathic* fever, which may be considered as threefold. There are fevers which consist of paroxysms; there are simple continued fevers; and fevers complicated with eruption. In other words, idiopathic fevers are divisible into the three great classes of INTERMITTENT, CONTINUED, and EXANTHEMATOUS. Among the symptomatic fevers which fall under the cognizance of the physician, a distinction has been drawn between those which are connected with LOCAL INFLAMMATION, and those attended with HÆMORRHAGY. It is not one of much theoretical importance, but its simplicity induces me to assume it as a basis of arrangement in this work.

Such are the leading divisions or orders of febrile diseases; but to understand in what endless varieties they are presented to us, it will be sufficient to consider the great variety of local inflammations with which they may be combined, and to reflect on the extent of influence which climate, season, peculiarities of soil, age, temperament, and condition of body, may be presumed to exert in modifying their symptoms, and controling their course and character.

CAUSES OF PYREXIA.

The causes of disease are divided into the *remote* and *proximate*. The former admit, in some instances, of a subdivision into *predisposing* and *exciting*. By a predisposing cause is understood something within the body,—some prior state or condition of the individual the subject of disease. An exciting cause is something exterior to the body (air, food, contagion) which, in the body predisposed, generates the disease.* The proximate cause is the actual change in structure or function, produced by the joint operation of the predisposing and exciting causes.

Predisposing causes of fever.—With regard to the predisposition to fever, very little is known with certainty. It is observed under aspects the most various. Every age is subject to it. It occurs under every variety of habit and temperament; but each of these circumstances modifies its character, and contributes to establish those minute shades of distinction among febrile diseases which it will be my object hereafter to point out and illustrate. It is, however, abundantly obvious that some persons are more liable than others to attacks of fever. In common language, their constitutions are more easily lighted up into fever. The circumstances which appear more especially to give this predisposition to fever are the following: 1. The sanguine temperament and irritable habit of body. 2. The period of youth. 3. Weakness of frame, or constitutional debility. 4. Depression of mind. These will come under special consideration hereafter.

Exciting causes of fever.—The exciting causes of fever are very numerous, and apparently of very opposite characters. External injuries, errors in diet, the free use of wine, and, more than all, atmospheric vicissitudes and exposure to cold and moisture, are among the most obvious. They have been called by pathologists the *common* causes of fever, in contradistinction to others of a more recondite nature which have been termed *specific; viz.* marsh and other miasmata, contagion, and morbid poison. Much importance is properly attached to each of these causes of fever. They open very wide fields of inquiry, which, in future chapters, will become the objects of separate and detailed investigation.

Proximate cause of fever.—It has been a favourite topic of inquiry among all writers on fever, what is its nature, essence, or *proximate* cause?—In what particular state of the fluids or solids of the body does it consist? The subject has been prosecuted with great diligence, but the result of the investigation is very unsatisfactory. The theories of fever are almost infinite, every sect in medicine having had its own way of viewing the subject. They may be divided into those which consider fever as a *general* disorder, involving more or less all parts of the body; and those which look upon it as primarily local in its origin. To the former belong the theories of Hippocrates, Galen, Boerhaave, Hoffman, Cullen, and Wilson Philip.

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* This distinction of predisposing and exciting causes is not to be considered of essential importance. Thus climate, by its gradual effect upon the frame, becomes both a predisposing and exciting cause. In such cases we employ the term *remote* cause.

The earliest opinion on the nature of fever was that of Hippocrates, who imagined it to be a *fermentation of the blood*, of a salutary tendency, whereby some noxious or peccant matter was thrown off. It is remarkable that this opinion was entertained before the class of eruptive fevers was known, the phenomena of which certainly afford the greatest countenance to it. Galen enlarged this theory, and gave as the proximate cause of fever a *degeneration* or putrefaction of other humours besides the blood, particularly the bile. It cannot be denied that there is a foundation in nature for a division of fevers into the two great classes of inflammatory and bilious. Sydenham adopted the Hippocratic theory; and the same doctrine was supported by Stahl, who acknowledged, however, that when the morbific matter was too abundant, or the powers of the body not sufficiently energetic, fevers were hurtful. Boerhaave assumed as the essence or proximate cause of fever, a *lentor*, or viscid state of the blood, which the heart propels with difficulty. Hence arises the necessity of an accelerated circulation to remove the obstacle.

The most rational views of the intimate nature of fever are those of Hoffman, who, without neglecting the apparatus of the blood vessels, taught that a still greater influence attached to the brain and nerves. His notion was, that fever consisted primarily in *atony*, or *a diminished energy of the nervous system*. Without following this author through the minute explanation of the several symptoms of fever which he founded upon this doctrine, we may be permitted to say, that as a general principle it is fairly admissible, and that it satisfactorily accounts for many of the first and most characteristic among them. Dr. Cullen went a step farther, and argued that the diminished energy of the brain brought on *spasm of the extreme vessels*, which spasm was the real *proximate* cause of fever. Since Dr. Cullen's time there have been several ingenious attempts to explain the pathology of fever. Dr. Wilson Philip supports the opinion that fever consists, not in a spasm of the extreme vessels, but in the præternatural distension, and consequent *debility of the capillaries.*

Each of these theories is open to many and strong objections. An insuperable difficulty indeed seems to hang over the pathology of fever, but it is fortunately of little moment.[*] No theory of the proximate cause of fever which has yet appeared has contributed in any material degree to improve the treatment; though several of them, especially the Hippocratic, have had the effect of misleading and confusing the practitioner. The phenomena of fever give evidence of diminished energy of the brain, with increased action of the heart and arterial system; and the difficulty in the pathology of fever consists in showing, in what manner these disturbances of function are connected with each other. The older pathologists supposed it was brought about by the *vis medicatrix naturæ*, for which in modern times we have substituted the principle of *reaction;* but the precise mode in which this reaction of the heart and arteries is effected appears to be altogether inscrutable.

To the diminished energy of the nervous system we ascribe the languor, lassitude, muscular debility, loss of appetite, general uneasiness, and pain of the back, which mark the invasion of fever. We are probably authorized in attributing to the same source the diminished and depraved secretion which occurs in fever. To the increased action of the heart and arteries we ascribe not only the quickened pulse and the febrile heat, but also the restlessness, headache, and delirium, which characterize the disease when fully developed. Such disturbances of the animal functions are certainly attributable to an increased flow of blood upon the delicate structure of the brain.

Vague and imperfect as are the several theories of fever already noticed, they have yet one merit in common. They coincide in viewing fever as a disorder in which something that pervades the whole body (be it blood or nervous influence) is primarily and essentially implicated. There are, however, pathologists who have claimed for themselves notoriety by denying the existence of *idiopathic* or essential fever. They have attempted to resolve all fevers into sympathetic disturbance of the constitution dependent upon the presence of local inflammation. Diocles was the principal ancient author who advocated this doctrine. It has received in modern times the support of Dr. Clutterbuck, who considers fever as dependent on inflammation of the brain; and of Broussais, who finds the source of fever in inflammation of the mucous tissues of the abdomen and chest. Many objections offer themselves to these views. It will be sufficient to advert to the phenomena of a common ague, which appear totally irreconcileable with such a doctrine. The more we extend our views, indeed, the more reason shall we have to admire the luminous conclusions of Dr. George Fordyce. "A fever," says this able writer,* "is a disease which affects the whole system. It affects the head, the trunk of the body, and the extremities. It affects the circulation, the absorption, and the nervous system. It affects the skin, the muscular fibres, and the membranes. It affects the body, and likewise the mind. It is, therefore, in every sense, a disease of the whole system."

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[*] Febris, si phænomena illius spectes, reliquis morbis est notior; si constitutionem et causam, omnium ignotissima.—Baglivi de Praxi Medica, cap. xiii. sect. 6.

Periodicity of fever.—Many of the phenomena of fever, its progress, and termination, appear to be guided by one of those laws of the animal œconomy, the influence of which is sufficiently manifest in a state of health—I mean the principle of *periodic movement.* The most obvious illustration of this which physiology affords is in the periods of utero-gestation and menstruation; but the recurrence of our appetites, the disposition to motion, sleep, and waking, and, in many, the natural evacuations, are phenomena regulated also by a principle of periodic movement. The regularity observable in the periods of the eruptive fevers, of which we shall hereafter speak more fully, is unquestionably the most beautiful and well-marked illustration of the same thing which pathology presents; but it is exemplified also in some of the phenomena of gout, mania, epilepsy, and menorrhagia. To this principle of periodic movement in the animal œconomy have been ascribed the *types* of intermittent, and the *crises* of continued fevers. Of the former we shall treat more fully hereafter. What is essential to be known concerning the latter may find its place here.

Febrile crisis.—The doctrine of critical days, that is to say, the supposition that fevers are disposed to terminate favourably or unfavourably at certain periods of the disease more than at others, has found many advocates, and some opposers, even from the earliest times. The very general reception which it has met with among mankind makes me unwilling to distrust it altogether; but if we admit it, bearing in mind how many circumstances may contribute to disturb the regular course of a disease, we must still acknowledge that it is theoretically doubtful, and practically useless. There has been some dispute about the precise days, but they are generally set down as the seventh, ninth, eleventh, fourteenth, seventeenth, and twenty-first, counting from the invasion of the cold fit. During the first week of fever no days of crisis can be ascertained. In the second week a crisis occurs on the alternate odd days, and the three first are therefore called the tertian crises. In the third week the critical days follow the quartan type, and the three last are therefore called the quartan crises. It is seldom that these observations can be verified in the fevers of this country, which run their course with much less regularity than those of warmer climates, the phenomena of which first suggested them.

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* Dissertations on Fever, No. 1, p. 28.

The only other illustration of that principle of periodic movement observable in the diseased actions of the body, which I shall now notice, is the disposition in all febrile diseases whatever to evening exacerbation and morning remission. This is strikingly manifested in *hectic* and *infantile* fever: but it is equally to be traced in all the more common forms of continued fever. Severe as the symptoms may have been during the day, they will generally be found aggravated about six or seven o'clock in the evening. Restless as the patient may have been during the night, he will generally obtain some rest, or relief from his complaints, soon after daylight. These circumstances are important in reference to the proper period for the exhibition of medicines.

Treatment of fever.—A few general remarks on the principles which should regulate our treatment of idiopathic febrile diseases will conclude what is to be said regarding the general doctrine of fever.

1. The most important feature in this view of the subject is, the natural tendency in all febrile diseases to run a certain course, and to terminate in the restoration of health. It is this circumstance which forms so prominent a distinction

between acute and chronic disorders. It is observable in many local affections attended with fever, but it is very strikingly illustrated in the case of continued fevers, and the exanthemata. The latter will always, and the former will very frequently, run their regular course, notwithstanding all the efforts of art. In ancient times, nay even at no very distant date, it was made a question, whether it was safe and proper to cut short a fever. The question is set at rest with regard to the *propriety* of doing so, but the possibility of it is still very questionable. It may sometimes be practicable, but it can never become the foundation of our treatment in febrile diseases. The natural tendency of fever to come to a crisis, or to work its own cure, may, on the other hand, be often kept in view with the best advantage. This is the foundation of the *medicine expectante* of continental writers; and though its extravagances are justly blameable, the spirit of the doctrine is good, and should never be disregarded.

2. We might lay infinitely more stress on this principle in the general treatment of fever, and act up to it with much more freedom, were it not that a second interferes with it, of at least *equal* importance, but leading to a practice diametrically opposite. This is, the disposition which exists in all febrile states of the system to local congestions and inflammations, and other irregular distributions of blood, which end in very serious disturbance of function, or actual disorganization of structure. Such a principle appears to have been overlooked by several of the old school of medicine, or at least never to have attracted from them that attention which its importance in practice merits. It shows the necessity of using every endeavour to cut the fever short, before such local congestions or inflammations have taken place, or at any rate before they have attained any dangerous height.

3. The third circumstance of importance in regulating the treatment of fever is the necessity of studying symptoms, and of deducing from them the indications of cure. The pathology of fever is so obscure, that it affords but little help in determining the plan of treatment. In many diseases, apoplexy for example, individual symptoms are of little practical importance, for we treat them by a consideration of their cause; but in fever the alleviation of particular symptoms is often a matter of the highest consequence. The variations too in the symp-

toms of a fever are often great and rapid; and with them must vary our views of the actual condition of the body, and consequently the plan of our treatment. It will be seen hereafter, that this doctrine applies equally to all the modifications of idiopathic fever.

4. The necessity of attention to the nature of the prevailing *epidemic* is the next point which I would urge. Epidemic diseases are with very few exceptions febrile; and it is a curious but well-ascertained fact, that the epidemics of particular seasons acquire a particular character, the knowledge of which assists very materially in forming a judgment as to the treatment proper to be pursued in any individual case. Sydenham was among the first authors who directed attention to the *epidemic character of seasons*. He pointed out, not only that different febrile diseases prevailed in different years, but that the same form of febrile disease assumed in different years different characters, and required corresponding changes of treatment. "I have difficulty," he states, "on the breaking out of any new epidemic, in providing, that one or two of those who first employ me are not hurried off before I can *trace the genius of the disease, so as to fix the cure of it*." This important doctrine might be illustrated, not only by the phenomena of continued fevers, whose characters are so infinitely varied, but by those also of agues, and the inflammatory affections of the thorax and abdomen. The principle is observable even in the phenomena of eruptive fevers, such as small-pox and measles, which are but little modified by the influence of other causes.

5. There are two principal modes of treating fever, the first of which has for its object, to lower the inordinate action of the heart and arteries. This is the evacuating and relaxing system, and it comprises the employment of bloodletting, general and topical, emetics and nauseant medicines, purgatives, saline diuretics and diaphoretics, and the cold affusion. The second has for its object to augment the tone of the system, and support the *vis vitæ;* this is the stimulating or tonic system of treating fever, and it includes the administration of cordials, such as wine and brandy, of the diffusible stimulants (ammonia, æther, and camphor), of the aromatics and aromatic bitters, such as serpentaria, angustura, and calumba, of quinine and arsenic, and lastly of opium. The skill of the physician is eminently displayed in determining under what circumstances

of fever, in what stages of fever, and in what kinds of fever, these several modes of treatment are respectively applicable, —to what extent they should be carried,—and how and when they may be advantageously blended with each other.

CHAP. II.

VARIETIES AND SYMPTOMS OF CONTINUED FEVER.

Nosological Divisions of Continued Fever. Circumstances modifying the symptoms of Continued Fever; Climate and Season; the state of the Air; Constitution and habit of body. Elementary forms of continued fever; Febris continua communis; Inflammatory Fever; low nervous Fever; Malignant Fever; Hectic Fever. Of complex Fevers. Causes of such complication. Enumeration of the several kinds of complex fever; their relative frequency. Nature of the local affection. Of Congestive Fever. Morbid Anatomy of Fever. Principles of Prognosis. Prognosis in Fever.

IDIOPATHIC FEVER was stated in the last chapter to admit of a three-fold division; *viz.* into intermittent, continued, and eruptive fevers. We shall begin by the consideration of continued fevers, and in the present chapter confine our attention to the various *appearances* which they exhibit.

The views of physicians with regard to continued fevers have undergone a number of very remarkable changes, to which nothing has more essentially contributed than the infinite diversity of symptoms by which they are characterised. Nosologists have been at great pains to note minutely these different symptoms, and have founded upon them their divisions of continued fever. Boerhaave has three, Linnæus four, Sauvages five, and Macbride five-and-twenty species of continued fever. Sauvages assumed as the basis of his arrangement, the simple circumstance of *duration*. A fever coming on suddenly and subsiding in three days he called *ephemera*, or ephemeral feverishness. A fever of greater severity extending to a week he called *synocha*. A fever which lasted a fortnight without materially weakening the pulse he denominated *synochus*. The term *typhus* was appropriated by him to that form of fever which extended to twenty-one days, and occasioned great exhaustion. His fifth form of fever was called *hectic*; it lasted a month or upwards. Prior to the time of Sauvages, authors were contented with a less formal arrangement, and usually took the general character of the symptoms as the ground-work of their distinctions. From the earliest periods it was observed that some fevers were mild, and easily subdued, while others were violent and hardly under the control of medicine. This led to the division of fevers into *benignant* and *malignant*. It could not, moreover, escape notice that certain fevers were characterised by symptoms of strong inflammatory action, while others exhibited marks of depressed nervous energy, and, as it was said, of *putrescency*. One of the first distinctions therefore among fevers was into the *febris ardens* and the *febris putrida*. There being, however, a variety of fevers, which show first the one, and then the other of these sets of symptoms, nosologists added a third class, or that of *mixed fevers*. Such is the arrangement of Dr. Cullen; and the terms Synocha, Typhus, and Synochus, were employed by him to express these fundamental divisions of continued fever.

Of late years pathologists have taken a different view of the varieties of continued fever. An increased importance is attached to the *exciting cause*, and the term *typhus* has been restricted to those forms of continued fever which are communicable by contagion. To that kind of fever which arises from cold, excess in wine, or other obvious sources of irritation, the term *common continued* fever is usually applied.

A third important distinction among continued fevers is now derived from the circumstance of their affecting all organs and functions equally, when they are called *simple fevers*, or implicating one organ or structure more particularly than another, and deriving from it some peculiarity of character. Fevers of the latter class (called *complex* fevers) are infinitely diversified, and have received the several denominations of brain fever, catarrhal fever, gastric fever, mesenteric fever, miliary fever, bilious fever.

These distinctions among fevers, though apparently vague, are yet sufficient for all practical purposes. They do not withdraw the mind from the important consideration, that the nosological divisions of continued fevers are arbitrary, and calculated, not so much to direct the method of cure, as to increase the facility of instruction. It will be found in practice that they run into each other by insensible degrees, possessing all their principal characters in common, which, however, many circumstances contribute in a remarkable manner to modify.

Before entering on a detailed exposition of the several kinds of continued fever, it will be proper to inquire what these modifying agents are, and what is the extent of their influence.

1. The most important of them all is *climate*. Its effects upon the general character of man, the structure of his body, his stature, his intellectual faculties, his habits, and dispositions, it is the province of the physiologist, the natural historian, and the political economist, to unfold. Its influence upon the morbid conditions of the body we shall have frequent opportunities of illustrating. We shall see it exemplified in the phenomena of hepatitis, gout, scrofula, dysentery. Of all states of disease, as fever is the most general, so is it that, over which climate has the greatest modifying influence. The important principle to be kept in view is, that a hot climate is favourable to the development of inflammatory or ardent fever; while the low, nervous, and putrid form of fever prevails chiefly in cold or temperate climates.

2. *Season* may be considered as modifying the character of continued fever much in the same manner as climate. The spring and summer seasons favour the prevalence of inflammatory fever; autumn and winter of the putrid or nervous fever. Warm climates and seasons give a tendency to complications of abdominal disease with fever; cold climates and seasons, on the other hand, to affections of the thoracic viscera. The evidences of this point of doctrine will appear when we come to treat of the diseases of particular organs.

3. The next of those circumstances which strikingly modify the symptoms of continued fever, is the *condition of the air*. The influence of the atmosphere on febrile diseases is a subject that opens a very wide and difficult field of investigation. It appears that of those states of the air which affect the origin, diffusion, progress, and character of fever, some are obvious to our senses, and some not. Sydenham has described these under the appropriate designations of the *temperies aëris manifesta*, and *occulta*. The condition of the air, in regard to heat and cold, dryness and moisture, must obviously exert an important influence; but it has further been always observed, that the most dangerous fevers are those which prevail where the atmosphere, in its chemical composition, is impure from the

neglect of proper ventilation. Such a vitiated state of the air (very liable to occur in camps, jails, ships, crowded and small apartments) gives occasion to those symptoms which are called *low* or *putrid*; while, on the other hand, a free circulation of cool and pure air conduces to the development of those which are now generally called the symptoms of *excitement*. This is sometimes exemplified in a remarkable manner, in the sudden removal of a patient labouring under continued fever from an impure atmosphere into the spacious wards of a well-regulated hospital. The symptoms have under such circumstances been observed to alter so materially, and the constitution to undergo such a change, as to require, and to enable the practitioner to carry into effect, measures which were previously inadmissible.

But besides these *obvious* qualities of the air which modify the symptoms of fever, there are certain others undiscoverable by any of our senses, which are said to have great influence over them. A few conjectures were hazarded by Sydenham, with the view of throwing some light on the nature of these *occult* qualities of the air. Some modern authors have contended, but on very vague grounds, for a hidden agency of the sun and moon; while others have imagined that the several electrical conditions of the air may have some influence in modifying the phenomena of fever. This latter is certainly not an unreasonable supposition; but the subject is involved in a degree of obscurity, which will probably long continue to baffle our researches. The existence, however, of some conditions of the air influencing fever, but neither appreciable by the thermometer or barometer, can hardly be doubted, and to them we must in a great measure attribute the prevalence of *epidemics*, still more decisively that curious phenomenon alluded to in the last chapter, the *diversity* in the character of the epidemic diseases of different years.

4. The last which I shall mention, in an enumeration of the important circumstances which modify the symptoms of fever, is confined in its operation to the affected individual;—I mean, *constitution and habit of body*. The degree in which peculiarities of constitution and habit affect the symptoms and character of fever is, however, less than might naturally have been expected. The important fact indeed is, that under circumstances the most opposite, fever often shows the most striking uniformity—that the young and the old, the robust and the

delicate, the active and the idle, the dissolute and those of regular lives, exhibit, when attacked by an epidemic fever, the same series of symptoms. Still a certain degree of allowance must always be made for the constitution and habit of body of the individual affected; and it has been found, that a number of minute circumstances referrible to this head, tend in different ways to the modification of fever. Of these the principal are, the period of life, the temperament of body, the tone of the fibre, and the kind of diet on which the individual had been previously nourished. A full diet of animal food, with a proportion of wine and distilled spirits, produces plethora, and with it a tendency to an inflammatory character in the fever. Weakness of body and flaccidity of fibre, whether the effect of original formation or of deficient nourishment, conduce to the low and putrid forms of fever.

I have already attempted to explain, that though continued fever should be considered as a single *genus*, yet for the convenience of illustration and description, it is useful to make some broad distinctions among its various forms.

The following five-fold division of continued fever is simple and sufficiently well characterised, and appears therefore in all respects adapted for an elementary treatise. It is the arrangement of Sauvages, slightly modified:—

1. FEBRIS CONTINUA COMMUNIS.
2. FEBRIS ARDENS.
3. FEBRIS TYPHODES.
4. FEBRIS MALIGNA.
5. FEBRIS HECTICA.

The symptoms, general character, and course of each of these elementary forms of fever will next claim our attention.

I. COMMON CONTINUED FEVER.

This complaint has no appropriate name in Dr. Cullen's Nosology. By Sauvages it was called febris ephemera: it is the irritative fever of some authors. In common language, it is called feverishness, or a cold. The following characters are embodied in our notions of common continued fever:—

1. A fever whose access is sudden, and not to be anticipated by any marks of prior illness.

2. A fever of short duration, having its crisis usually in three or four days, seldom extending beyond seven.

3. A fever not implicating seriously any of the great organs of the body, and therefore devoid of danger.

4. A fever arising from common causes, and never sufficiently intense to throw off contagious emanations.

Phenomena of common continued fever.—Such a fever exhibits all the characters of simple pyrexia; that is to say, it commences with a shivering fit, lasting for a few hours, to which succeed heat of surface, always greatest during the evening and through the night, weakness of the limbs, superficial muscular, or as they are often called *rheumatic* pains, affecting especially the arms, sides, legs, and back. The appetite fails; there is thirst; the nights are restless; the tongue is furred, the urine scanty, the skin dry, and the bowels confined. The mind participates in the languor of the body, and is incapable of any effort of thought. The pulse averages 84 in a minute. These symptoms, varying in intensity according to the care which the patient takes of himself, or the activity of his medical attendant, continue for a few days, when the disease declines, sometimes suddenly, sometimes gradually. A profuse perspiration often proves the natural *crisis* or termination of this mild kind of fever; at other times the same desirable end is brought about, even more quickly, by the efforts of medicine. The disease is eliminated by vomiting or purging. The convalescence from this kind of fever is never tedious; the springs of health and strength are not seriously injured by it, and therefore the body quickly recovers its tone and powers.

Superadded to these, the essential symptoms of common continued fever, we often meet with others of a more local character. They are of two kinds, and they lead to a distinction of the milder forms of fever into the two classes of *Catarrhal* fevers, and Gastric, or *Bilious* fevers.

Catarrhal fevers will be described hereafter. Bilious fevers are characterised by the following association of symptoms:—nausea, vomiting, a bitter, or highly disagreeable taste in the mouth, yellowness of the conjunctiva, a sense of weight on the head, giddiness, extreme thirst, costiveness, and, after the exhibition of appropriate aperients, the discharge of large quantities of bile by stool.

II. INFLAMMATORY FEVER.

This disease, described by the ancients under the title of causa or febris ardens, and by Cullen under that of synocha, may be thus generally characterised:—

1. It is a fever commencing suddenly, running its course rapidly, and often, in spite of every care, proving fatal by serious injury to one or more internal organs.

2. A fever seldom met with, in its pure form, except in hot countries, where the atmospheric temperature is for a length of time, and steadily, above 70 degrees of Fahrenheit.

3. A fever marked by high excitement of the heart and arteries, and having for its leading symptoms a hard pulse, buffy blood, and disposition to active hæmorrhage.

4. A fever in which local inflammation, both of external and internal parts, is easily excited, and rapidly developed.

Phenomena of inflammatory fever.—Its invasion, which is generally very sudden, is marked by excessive prostration of strength, with some shivering, soon succeeded by a violent heat of skin, pain of back, head-ache, giddiness, and general uneasiness. The head-ache is very acute, the eyes are suffused, the countenance flushed; the temporal and carotid arteries beat violently; there is often profuse bleeding at the nose, with restlessness; and occasionally, but by no means constantly, delirium. The tongue becomes rapidly coated with a thick fur. Nausea, vomiting of bile, great thirst, and a costive state of bowels prevail. The pulse varies from 96 to 110, strong, full, and regular. The respirations are oppressed and hurried; the skin hot and excessively dry; the urine scanty and high-coloured. When very violent, and suffered to run its course unchecked by medical treatment, inflammatory fever may prove fatal in less than twenty-four hours. Under these circumstances, death takes place in consequence of an engorged state of the brain. The ancient physicians expressed this by saying that the patient died from the violent ebullition of the humors. In other cases time is given for the development of active inflammation in some internal organ, the brain, the lungs, the pericardium, the liver, or the bowels; and the appearances after death will correspond. When, either from proper treatment, or a less intensity of disease, death is obviated, a singular state of nervous irritability sometimes succeeds, protracting recovery for a very long period. The patient remains weak and languid, and the appetite bad. These evils are probably attributable to some injury done to the delicate structure of the brain by the too rapid circulation of blood within it.*

Under judicious management, more especially the early and free abstraction of blood, inflammatory fever frequently subsides, and the recovery is both complete and rapid. It is hardly necessary to specify the signs which announce a favourable change. A diminution of the hardness and activity of the pulse is that by which we are mainly to be guided.

III. TYPHOID, OR LOW NERVOUS FEVER.

The following are the several circumstances embodied in the modern notions of typhus, or typhoid fever:—

1. A fever of slow and insidious origin, running a lengthened course, seldom less than fourteen, or exceeding twenty-eight days; the average duration may be stated at three weeks: hence its familiar denomination of a slow, or twenty-one day fever.

2. A fever attended during the principal part of its course, and sometimes (though rarely) from its very commencement, with symptoms of depressed or exhausted nervous power; especially muscular weakness, feeble pulse, and muttering delirium.

3. A fever attended at its *height* with an extremely depraved state of the secretions, evidenced in the dry and rough tongue, the black sordes collected on the teeth and gums, and the general fœtor of the body.

4. A fever throwing off, and capable of propagating itself by, contagious emanations.

Onset of typhoid fever.—This disease, the typhus mitior of Cullen, and so admirably described by Huxham under the title of the slow nervous fever,† is usually gradual in its approach. The patient is under its influence many days, and sometimes several weeks, before it confines him to bed. Depression of spirits, an inability to exertion, mental or bodily, sleepless nights, and irregular bowels, are the usual precursors of this disorder. To these succeed chilliness, sighing and oppression in breathing, and loss of appetite; the patient at length becomes so weak that he can no longer sit up without feeling faint. The disease is then fairly set in, having its exacerbation in the evening, and declining in violence towards the morning.

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* Irvine's "Observations on Diseases, chiefly as they occur in Sicily." Also, Sir W. Burnett's "Account of the Fever of the Mediterranean Fleet."

† Huxham's Essay on Fevers; 1775; p. 74.

It often happens, however, that the early symptoms of the most genuine typhus fever are such as indicate considerable arterial action. There is headache, a flushed face, a hot skin, and high-coloured urine; the pulse is frequent and sharp. These symptoms yield to the loss of blood, either from the arm, or by leeches to the temples, when the true typhoid symptoms manifest themselves. Such a fever is the *synochus* of Dr. Cullen, but not distinguishable in practice from the typhus of other authors. The mode of attack depends partly upon season, partly on the habit of the individual. In some very unfavourable cases there is no symptom of arterial energy even from the first, but the disease sets in with all the evidences of exhaustion or *collapse*.

Phenomena of simple typhus.—Among the characters of typhoid fever, the *expression of countenance* deserves mention, so uniform as to make all typhoid patients, in a great degree, resemble each other. It is a very peculiar expression of *anxiety*, joined to a flushed appearance of the cheeks. It is seldom wanting, and constitutes, in fact, a striking characteristic of typhus. The pulse in this form of fever is very frequent, generally averaging from 110 to 120, small and weak. The tongue, at first very much coated, becomes in the progress of the disease brown, or almost black; it is dry and parched; occasionally, instead of being coated, it appears smooth and præternaturally red. Black sordes collect around the teeth. The evacuations from the bowels are sometimes natural in their aspect, but oftener depraved in appearance, and fœtid; as the disease advances they are passed involuntarily. The urine is in like manner fœtid, turbid, and in small quantity. The skin is harsh and dry. From an early period of the disease delirium occurs, of a low muttering kind, chiefly perceived at night. Tremors, subsultus tendinum, with total want of sleep, and great uneasiness or *restlessness*, supervene. In some cases we observe the opposite, but equally alarming condition of *stupor* and insensibility, merging at length in confirmed coma. Typhus is further characterised by extreme weakness of muscular fibre; the hands tremble; the patient with difficulty protrudes his tongue; the slightest exertion, such as rising in bed, aggravates all the symptoms, or even brings on a fit of syncope. The body emaciates rapidly. Effusions of blood underneath the skin take place, and appear in the form of livid spots or streaks, called petechiæ and vibices. As the disorder advances to its height, the symptoms increase in severity. Delirium continues through the day as well as night; there occur picking at the bed-clothes, dilatation of the pupil, hiccup, tympanitic distension of the belly, and retention of urine from palsy of the muscular fibres of the bladder. The duration of the disease varies from two to three weeks; soon after which, unless some favourable change or crisis takes place, the countenance collapses, the features shrink, the eye loses its lustre, and the pulse sinks. Rattling in the throat, coldness of the extremities, and profuse clammy sweats, with a cadaverous odour of the body, succeed, and indicate the near approach of death.*

Under more favourable circumstances, the countenance regains its natural aspect, the edges of the tongue become clean, appetite returns, and, by slow degrees, the patient recovers. The convalescence from typhoid fever is always tedious, and liable to many interruptions, the principal of which arise from cold, premature exertion, a diet too nourishing, and the injudicious employment of tonic and stimulant remedies.

IV. MALIGNANT FEVER.

This form of fever, called by some of the older authors putrid fever, and by Dr. Cullen *typhus gravior*, may be thus characterised:—

1. A fever in which the *humors* of the body (that is to say, the blood and the several secretions derived from it) are materially vitiated in their condition. The coagulable principle of the blood is weakened; but the exact nature of the change which the blood undergoes in this disease has not been ascertained. In other words, malignant fever is marked by a loose or dissolved state of the blood, with fœtor and great depravation of all the secretions.

2. A fever accompanied from the very onset with intense disorder of the brain and nervous system.

3. A fever accompanied with a strong disposition to putrescency in the *fluids*, and to gangrene in the *solids* of the body.

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* The great degree of danger accompanying this disease marks the impropriety of the term typhus *mitior*, by which Dr. Cullen designated it.

4. A fever running a rapid and generally fatal course, being scarcely under the control of any remedial measures.

5. A fever eminently contagious.

The term *malignant* is employed in medicine to express two different conditions of disease. Cancer and fungus hæmatodes are chronic diseases of an uncontrollable, or, as it is said, *malignant* nature; but the acute malignancy of which we are now treating is altogether different. The nature of this peculiar condition of the body, so much insisted on by the older writers, has been in later times the frequent subject of dispute. That the powers of the living body, in checking the putrescent tendency of all animal matter, should be diminished in certain states of disease, does not, however, appear to be an unreasonable supposition. The state of acute malignancy has been sometimes considered as indentical with, or at least closely allied to, *debility*; but the two conditions are essentially distinct. In consumption, menorrhagia, marasmus, and dropsy, there is chronic exhaustion and debility in the highest grade; but in these diseases we meet with no symptoms like those of malignant fever. It was justly remarked by the ancient physicians, that acute malignancy and putrescency chiefly prevailed in persons of weak and lax vessels, with a poor, crude, and watery state of blood, but that it was also occasionally met with in persons of strong rigid fibre, and dense viscid blood; that is, in vigorous and plethoric habits.

Malignant fever is an elementary form of disease, which sometimes shows itself idiopathically and uncombined with local disorder, but it is more usual to meet with it associated with other maladies. Small-pox, measles, plague, and scarlatina, are occasionally seen coupled with malignant fever. It runs by insensible degrees into the low or nervous fever, just as the latter, in like manner, runs into inflammatory fever.

Phenomena of malignant fever.—The following is a brief detail of the symptoms and progress of malignant fever:—The disease sets in, for the most part, with great violence, and is attended from the first with deep-seated pain of the head, giddiness, oppression, delirium, and coma. The stomach and bowels are in a highly irritable state; there is vomiting and diarrhœa. From the very earliest periods of the disease there is a disposition to hæmorrhagy. The blood every where breaks through its vessels; and this it does in an especial manner throughout the mucous textures of the body, and in the skin. There is bleeding from the nose, gums, stomach, lungs, bowels, and urethra. The stools are pitchy; the urine dark coloured. In women there is profuse menorrhagia. The subcutaneous hæmorrhage, or *ecchymosis*, shows itself in larger or smaller patches, called vibices and petechiæ. Blood drawn from the arm coagulates imperfectly, sometimes not at all, and passes rapidly into putrefaction. The putrescent tendency manifests itself in various other ways. Gangrene is liable to take place in parts at a distance from the heart, more especially in the feet and genitals. The secretions participate in the same putrescent disposition. The urine and the breath are highly fœtid; the aspect is squalid, and a cadaverous odour arises from the surface generally. In such a state of the system death commonly takes place in the course of four or five days, when a rapid putrefaction of the body ensues. On dissection, the tendency to hæmorrhage manifests itself throughout the internal structures of the chest and abdomen.

V. HECTIC FEVER.

The characters of hectic fever are these: —

1. It is a fever running on for upwards of a month, often for several months, and never showing any distinct crisis.
2. A fever prevailing *exclusively* in weakened and irritable habits.
3. A fever having well marked daily exacerbations, the rigors usually occurring in the afternoon, and the sweating stage extending through the whole night.
4. A fever which never spreads by contagion.

There are pathologists who, believing in the idiopathic nature of *typhoid* fever, yet deny this attribute to hectic, and affirm that such a form of fever is invariably traceable to some local disease. Dr. Cullen was of this opinion, and he refused therefore to give to hectic that place in the Nosology which had been assigned to it by Sauvages. This fundamental error in the Cullenian pathology has led to many disputes in later times. Idiopathic hectic is far from being uncommon. The most familiar instance of it is that which is seen in children of weak constitution, and is commonly known by the name of the *infantile remittent;* but it is met with also in adults, especially in females. Women of delicate habit, and those especially who suckle their children too long, are frequently attacked by it. It may be witnessed in adult males exhausted by severe confluent small-pox, or by long continued diabetes.

There can be no doubt, however, that hectic displays itself much more commonly as a symptomatic than an idiopathic affection. It has for its principal cause extensive and protracted ulceration, this being one of the most common ways in which that degree of constitutional weakness is kept up which is essential to the development of hectic. For this reason we shall defer the minuter detail of the symptoms of hectic, as they appear in the *adult*, until we treat of PULMONARY CONSUMPTION. The phenomena of *infantile* hectic will be described hereafter under the head of INFANTILE FEVER AND MARASMUS.

OF COMPLEX FEVERS.

From the detail of the several elementary forms of fever which has now been given, it will be obvious that, however they may differ in some points, they yet agree in affording evidence of deranged function in every organ of the body,—the brain, the heart, the lungs, the stomach and bowels, the liver, the kidneys, and the skin. Cases both of inflammatory, typhoid, and malignant fever have been observed, which follow the progress I have now attempted to describe, implicating equally every organ and function. These are cases of *simple* fever, but they are comparatively rare. It is much more common to see one or other of these organs particularly affected. What the circumstances are which direct the violence of the febrile action upon one organ or structure in preference to another, does not always appear, but it can sometimes be satisfactorily explained.

Peculiar conformations of body, hereditary predispositions, the habit of the body, whether spare or plethoric, and the weakening of parts by previous diseases, have a decided influence. A stout young man, with a short neck, and of a full habit of body, if attacked by fever, will be more likely, *cæteris paribus*, to have symptoms denoting determination to the head, than a tall thin young man, with a narrow chest, and subject to cough. The latter, during the progress of fever, may very probably have difficult breathing, with pain of side, and purulent expectoration. Much may be attributed also to the influence of climate; heat favouring the disposition to abdominal, and cold to thoracic affections. Season has in like manner its share in the effect. In some epidemics we meet with abdominal, in others with cerebral complications. We can also, in some degree, connect the circumstance with the *type* or kind of fever. Thus, hectic fever has a peculiarly strong tendency to affect the mucous membrane of the ileum. But it must be confessed that these explanations are insufficient, and that something more is required to account for the phenomenon. It appears, from numerous observations, that various states of disease of the brain and its coverings, both acute and chronic, such as blows on the head, fractures of the cranium, lacerations of the dura mater, tumours and abscesses within the substance of the brain, are not unfrequently attended by disease of distant organs; such disease being attributable simply to a state of disordered circulation in the encephalon, and disturbance in the functions of the nervous system. To the same cause, whatever be its precise nature, we refer many of those local affections with which fever is so frequently complicated.

It is a point of some importance to determine what the organs and structures are, most liable to become affected in the course of fever,—what is the nature of these local affections,—and at what periods of the fever they chiefly occur.

Fevers, whether of the inflammatory, typhoid, or malignant kind, are complicated with—

1. Affections of the head.
2. Affections of the thoracic viscera (*heart, lungs, pleura*).
3. Affections of the abdomen (*mucous membrane of the intestines, peritonæum, liver*).
4. Affections of the skin and subjacent cellular membrane.

1. *Cerebral complications.*—Of the organs liable to become more particularly implicated in fever the most important is the brain. The symptoms by which we judge of the presence of cerebral complication are the same with those of phrenitis and apoplexy, and will be described in detail when treating of those disorders. The principal are headache, giddiness, suffused eyes, dilated pupil, delirium, coma.

2. *Thoracic complications.*—These may assume the several forms of bronchitis, pleurisy, peripneumony, or pericarditis. The most common is bronchial inflammation, characterised by cough, and mucous, or sometimes purulent, expectoration. In the most intense cases, the air-cells of the lungs become

clogged with a viscid mucus, and the blood is not duly arterialized. Under these circumstances the breathing becomes oppressed, the lips and cheeks are of a livid or dusky hue, and the functions of the brain become gradually more and more embarrassed. The patient is first incoherent, and then comatose. The extremities become cold, and death ensues from the destructive effect of mal-oxygenated blood upon the brain and nervous system.

3. *Abdominal complications.*—These are both frequent and of varied character. Of all the structures within the abdomen the mucous membrane of the bowels is that which, in fever, is most prone to diseased action. Diarrhœa, bloody stools, violent action of mild medicines, and tympanitic distension of the belly, are the usual evidences of such an occurrence. In some cases an extreme tenderness of the bowels indicates that the peritonæum is the seat of inflammation, more or less active. In hot countries fever is frequently found to bring on dysentery. The liver may next be mentioned as liable to suffer in the course of fever. It is not observed to any great extent in this country, but it is very commonly met with in hot climates, and gives a marked character to the endemic fevers of those regions. Hepatic complication is known by the concurrence of jaundice, irritable stomach, and pain or fullness of the right hypochondrium, with the usual symptoms of inflammatory fever.

4. *Superficial complications.*—Fevers are occasionally complicated with affections of the skin and subjacent cellular membrane, such as miliary eruption, erysipelas, inflammation of the parotid and other glandular structures, phlegmasia dolens, abscesses, and carbuncles. Of these the most to be dreaded is erysipelas, which, occurring to those labouring under or recovering from a severe fever, proves in many instances the immediate cause of death.

Latent affections of the viscera in fever.—It was well known to many of the old physicians, especially to Baglivi, that fever was sometimes complicated with internal affections that gave during life no very obvious sign of their existence. Of late years this doctrine has been much insisted on, and Dr. Tweedie has the merit of having drawn attention to it in a forcible manner. He has not only pointed out the variety and frequency of such *latent* complications, but he has also in some degree explained them. The pathological principle which he inculcates is the obscuration of concomitant local disease by the severity of cerebral derangement.* Sensibility generally is thus lessened, and, as a consequence, sensibility to morbid impressions. Latent or insidious inflammation may from this or other causes take place in the mucous and serous membrane of the abdomen, in the pericardium, and in the pleura; but its principal seat is the lining membrane of the bronchia. When the affection of the brain is urgent, bronchial inflammation often goes on in an intense form, without any suspicion of its existence. This shows the necessity of a guarded prognosis in all cases of severe fever, notwithstanding the absence of any urgent local symptom. It also points out the propriety of frequent stethoscopic examinations of the chest in the course of fever, especially if protracted.

Relative frequency of the complex fevers.—Various attempts have been made within the last few years to estimate the relative frequency of the several complications now adverted to. Dr. Crampton informs us that in one of the Irish epidemics, out of 755 cases of fever, 550 complained of the head, 129 of the chest, and 76 of the abdomen. Dr. Tweedie states† that out of 521 cases treated at the London Fever Hospital, between the 1st of September, 1828, and the 1st of September, 1829, there were—

Cases of simple fever	163
Cases complicated with well-marked cerebral affection .	114
——————— thoracic affection	103
——————— prominent abdominal affection .	71
——————— affections of head and thorax .	26
——————————————— abdomen .	30
Cases affecting all the great cavities	14
Total . . .	521

These statistical notices are not devoid of interest, but to the practical physician they are of little value. The proportions of the several classes will be found to vary in different places, and even in the same place in different seasons, and in different years.

Of congestive fever.—Some controversy has taken place regarding the nature of the affection, under which the different organs labour when attacked in the course of fever. We have described them as being essentially inflammatory, but it has been contended by Dr. Armstrong and others, that, in a large proportion of cases, the vessels of the affected part are in a state, not of inflammation, but not of distension, or *congestion*. A distinction has even been attempted between *inflammatory typhus*, in which the seat of disease is in the system of arterial vessels, and *congestive typhus*, in which the branches of the venous system are concerned. It has been supposed that this distinction between the inflammatory action of arterial capillaries, and the congestion of blood in veins, explains the diversities of morbid appearances found after death, and may serve as a guide in directing us to the proper methods of treatment. The chief situations where congestion in fever may be expected are,—1st. The sinuses of the brain; 2nd. The lungs; 3rd. The system of the vena portæ. That congestions of blood may and often do occur in those situations cannot for a moment be questioned, but it still remains to be shown that they do not run into the state of actual inflammation. Until this is done, we cannot attach any great degree of pathological or practical importance to the distinction. The appearances on dissection in those who die of fever sufficiently point out, that danger is chiefly to be apprehended from the occurrence of inflammation; and that against such a state the measures of the physician are to be directed, when he has evidence of local disease complicated with continued fever.

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* Tweedie on Fever, Cyclopædia of Practical Medicine, vol. ii. p. 172.

† Tweedie in Cyclopædia of Practical Medicine, vol. ii. p. 175.

The researches of modern pathologists have undoubtedly done much towards elucidating the nature, varieties, and phenomena of complex fevers; but it is due to the older physicians to remark, that they were fully sensible of the importance of this part of the pathology of fever. Riverius has the following very luminous passage in his treatise on putrid fevers:* "In febrium acutissimarum et perniciosarum curatione hoc diligenter advertendum,—rarissime eas fieri sine interna et *peculiari* visceris cujusdam affectione, et *plerumque* inflammatione. Quare nunquam omittenda cura hypochondriorum, capitis, thoracis, uteri, renum, et vesicæ, ut omni ratione investigemus quæ harum partium insigniter laboret, et ei, quoad fieri potest, subveniatur."

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* Riverius. Praxis Medica, lib. 18, cap. 2. 1646.

The last topic to which I proposed to advert in this division of the subject, was the period of fever at which these local determinations are most usually observed to take place. In a few cases it is at the very onset of the disease; and this circumstance is important, as leading to the distinction between the states of *oppression* and *collapse.* The attack of fever is always attended by weakness; but if the blood be at that period particularly determined to the brain, a state of apparently extreme debility is brought on, which has often intimidated the practitioner, and prevented the adoption of those decisive measures which might then be *safely* had recourse to, and which alone could ensure a favourable termination. In a large proportion of cases where great weakness attends the *onset* of the disease, the symptom is to be attributed to a load oppressing the brain, to a state of *oppression*, and not of weakness, exhaustion, or as it is called, *collapse.* Local congestions, however, take place in the *progress* of fever more frequently than at its commencement. At every visit, therefore, the physician will carefully inquire into the condition of each of the great cavities, with a view to ascertain their implication in, or freedom from, local disease. They have even occurred when the febrile symptoms have subsided, and the patient has been considered convalescent. To decide, whether the symptoms which then supervene are referrible to a state of oppression or collapse, is one of the most difficult points in the practice of physic. It can be effected only by a close attention to particular symptoms. The pulse is for the most part the safest guide; but the appearance of the countenance, the position of the body, and other minutiæ which *clinical* observation can alone teach, assist materially in the decision of the question.

MORBID ANATOMY OF FEVER.

A high degree of importance has been attached of late years to the appearances presented on the dissection of those who die of fever, more especially of fever of the typhoid and malignant type. They have been detailed by numerous authors with extreme accuracy, and it cannot be denied that such contributions to the stock of our knowledge concerning fever are useful. But the student will carefully remember that morbid anatomy throws no light whatever on the nature and origin of fever. It merely points out its effects and ravages, and illustrates those local affections which we have mentioned as so often coupled with fever, and proving so frequently the immediate causes of death. Viewed in this light, the morbid anatomy of fever is still a subject of commanding interest. Its extent, however, is very great, and it deals in minutiæ which it is hardly necessary to insist upon in a work devoted only to the elements of practical medicine. It will be sufficient here to enumerate the principal appearances which present themselves in different cases in each of the three great cavities of the body.

1. In the brain we meet with gelatinous effusion upon the surface of the arachnoid membrane. Serum is found in small quantities in the ventricles; besides which we perceive in many instances a fullness in the vessels of the brain, especially of the pia mater, as if they had been subjected to a fine anatomical injection. The brain itself is often more than usually vascular, the turgescence being observed in a larger proportion of cases in the medullary than in the cortical portion.

2. In the chest we observe increased vascularity and thickening of the lining membrane of the bronchia, with abundant mucous or purulent secretion from its surface. The pleura, in some instances, appears inflamed, with deposition of coagulable lymph, or effusion of serum (puriform or bloody) into the general cavity of the chest, on one or both sides. The lungs appear congested, hepatized, or infiltrated with serum or pus, according to the period at which death took place, and the intensity of the symptoms during life. In some cases, but more rarely, a deposit of coagulable lymph and serum will be found on the surface and in the bag of the *pericardium*.

3. The abdominal appearances are even still more diversified. The following are the most common:—increased vascularity of some portion of the mucous membrane of the alimentary canal, especially the jejunum and ileum; effusions of blood beneath the mucous membrane; thickening and pulpiness of the mucous surface; abrasion of the membrane; and, lastly, ulcerations of the bowels. These are of two kinds;* 1. Acute sloughy ulceration, having its seat in the general surface of the membrane; and 2. Tuberculous ulceration, having its seat in the mucous follicles of the villous coat, and chiefly

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* Dr. Chambers in London Medical Gazette, vol. ii. page 514.

found where those follicles are most numerous and distinct; viz. near the termination of the ileum.

The peritonæum sometimes exhibits in fever traces of diffused inflammation, but the most remarkable appearance which this structure presents is *perforation*. Both kinds of ulceration are liable to penetrate through all the coats of the bowel, followed by the escape of its contents into the general cavity of the abdomen, and violent peritonitis. The symptoms which indicate intestinal perforation are—sudden excruciating pain, with distension of the belly; vomiting; a small and rapid pulse; shrinking of the features, cold sweats, and death within thirty-six hours. The liver and spleen present no appearances in continued fever which have any specific character. The mesenteric glands are often enlarged, and where ulceration of the bowels has taken place, they sometimes contain purulent matter.

PRINCIPLES OF PROGNOSIS.

The judgment of the physician regarding the probable course, duration, and termination of any particular case, is founded, in a great measure, on the observation of *symptoms*. This, in medical language, is called the *prognosis*; and the principles by which it is regulated apply to a certain extent to all diseases.

1. There is, in the first place, a *general prognosis* founded on an extensive view of disease, which enables us to give an opinion regarding the probable course of particular cases, without any minute attention to symptoms. Thus, we can confidently predict, that a case of catarrh or sore throat will end favourably, that a case of acute rheumatism will prove tedious, a case of croup hazardous, of consumption hopeless. In treating of diseases in detail, some allusion to general prognosis will always be made.

2. There is a prognosis applicable only to individual cases, and this is to be regulated by an attention to a number of minute circumstances, in detecting which, and estimating their relative importance, the skill of the physician is eminently called forth. This part of his duty can be but imperfectly taught in books. It is generally said to be guided by the presence or absence of certain *symptoms*, which are set down under the heads of *favourable* and *unfavourable* symptoms.

These have been collected together with great industry by various authors, but taken singly they are not of that consequence which, from their statements, might have been inferred. It is impossible, indeed, to lay down with strict accuracy the rules of prognosis. In actual practice, it is commonly determined by several considerations of a *general* nature; and of these, it will be found, that one of the most important is the period of the disease at which a particular symptom occurs.

To be able to draw legitimate conclusions, therefore, with reference to prognosis, from the observation of such a symptom, it is necessary to be well acquainted with the usual train in which the phenomena of the disease manifest themselves, and the causes upon which each depends. The age and habits of the patient, the natural strength of his constitution, the circumstances in which he is placed, the period of time which has elapsed before medical treatment is resorted to, and the possibility of employing medicines effectually, have also a most important influence over the course and probable termination of the disease. They must all, therefore, be taken into consideration in determining the prognosis; but they are obviously much too indefinite for particular investigation.

Prognosis in fever.—The *general* prognosis in continued fever is certainly favourable. Under proper management, a large proportion of cases recover. This is a question in medical statistics which has been made an object of inquiry by different writers; and a very curious coincidence has been traced in the extent of mortality occasioned by continued fever, under circumstances considerably different.* The average of deaths in the hospitals of this country appears to be in the ratio of about one to twelve, which is believed to be considerably *below* the ordinary scale of the mortality of fever, when it occurs in private habitations, even with access to medical assistance. It varies, of course, with the general character of the epidemic, the period of the disease at which it is first submitted to medical treatment, and those other circumstances of nearly equal importance, whose influence has been already adverted to.

The particular symptoms denoting danger in continued fever are those, first, of excessive inflammatory excitement; secondly, of topical congestion; thirdly, of great depression, or irregular action of the nervous power; and, fourthly, of malignancy and putrescency. In the brief detail which has been given of the phenomena of continued fever, under its five elementary aspects, these have all been specially mentioned. It will be unnecessary, therefore, to dwell on this branch of the subject, in which, after all, common sense proves a ready and satisfactory guide.

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* Consult Bateman's "Succinct Account of the Contagious Fever of this Country." London, 1818. Page 75.

A variety of symptoms are mentioned by writers on continued fever as favourable; such as deafness, tumours behind the ears, miliary eruptions, diarrhœa, sediments in the urine, the breaking out of a sweat, and the formation of abscesses. Upon the latter much stress has been laid. They have been considered as *critical* discharges, that is to say, as drains, serving to carry off noxious humours generated during the fever. This point of doctrine we do not now insist upon; and upon the whole it may be remarked, that while, on the one hand, there is no single symptom, however formidable, which has not been recovered from, so, on the other hand, there is no one which, occurring in the course of fever, can be set down as decidedly favourable; but that the probability of recovery must always be estimated by the character of the symptoms, when viewed in connection with each other.

CHAP. III.

CAUSES OF CONTINUED FEVER.

Predisposition to continued fever. Exciting causes of fever. Of common causes leading to ephemeral fever. Of Cold as the cause of disease in general and of fever in particular. Alternations of Atmospheric Temperature. Of the specific causes of fever. Of Miasms. Of Contagion. General Doctrines of Contagion.

PREDISPOSITION TO FEVER.

When the human body is in full health and vigour, and its functions duly performed and nicely balanced, it is often enabled to resist the impression of morbific agents; but when this equilibrium is disturbed, and the powers of life enfeebled, the same causes, formerly innocuous, exert their influence and engender disease. The following are the chief circumstances which pave the way to the inroads of continued fever.

1. *Age.*—The early periods of life are those most prone to feverish excitement, the vascular system being then most active. In infancy and childhood a well marked variety of hectic fever prevails, known by the name of the infantile remittent. The age most favourable for the development of all the more severe forms of fever, whether inflammatory or typhoid, is from fifteen to thirty. Dr. Tweedie* states that out of 676 cases of fever treated at the Fever Hospital, 408, or two-thirds of the whole, were of these ages.

2. *Debility.*—Weakness of frame powerfully predisposes to the engendering of continued fever. Occasionally, indeed, we see the most robust and plethoric become its subjects, and ultimately its victims; but, in a large proportion of cases, the ravages of fever are exerted on those who are either constitutionally weak, or in whom debility has been brought on by accidental causes, such as an impoverished diet, long-continued bodily fatigue, close confinement, a succession of sleepless nights, irregular habits, late hours, and previous diseases, especially those requiring a course of mercury.

3. *Mental depression.*—This has the strongest claims to be set down as a predisposing cause of continued fever. Fear, grief, anxiety, disappointment in worldly pursuits, the harass of business, and intense study, are the conditions of mind which will oftenest be found, especially in the upper ranks of society, to have preceded a violent illness, more especially a continued fever. Hope and confidence, on the other hand, serve, in a manner no less remarkable, to ward off the attack of fever, or, if generated, to repress its violence.

4. *An irritable habit and sanguine temperament.*—This peculiar condition of the nervous system was ranked by the older authors among the circumstances that predispose to fever, and cases sometimes occur that give countenance to the notion.

EXCITING CAUSES OF FEVER.

It was stated in the first chapter (page 11) that the exciting causes of continued fever admitted of a division into the two great classes of *common* and *specific*. The first of these are, in a measure, obvious to our senses; and their operation is, to a certain degree, intelligible. The second are more recondite in their nature, and their mode of operation is very obscure, if not altogether inscrutable. Another well-marked line of distinction between them may be drawn from the circumstance of the first, or the common causes of fever, inducing this state of disease *rapidly*, while the latter require a certain, and generally a defined length of time, before their influence is apparent. Further, feverishness suddenly brought on by any of the more *common* kinds of irritation, is for the most part transient in its course, and has accordingly received from nosologists the name of *ephemera*; while those which originate from *specific* causes are often hazardous and always protracted.

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* Cyclopædia of Practical Medicine, vol. ii. page 189.

COMMON CAUSES OF FEVER.

A variety of circumstances are capable of engendering fever in the human body, even in its state of the most perfect health; but this they will more certainly do when the frame is in any way predisposed towards fever. The following may be enumerated as the most common of the direct excitants of fever:— 1. External injuries; 2. Overloading the stomach with food of too stimulating a quality; 3. The too free use of wine and distilled spirits; 4. Insolation, or exposure to the direct rays of the sun under circumstances of great bodily fatigue; 5. Painful dentition; 6. The state of the air, in respect to its obvious qualities of heat and cold, dryness and moisture.* Of all these *common* causes of continued fever, the most frequent is *cold*; and as cold will hereafter be mentioned as an occasional cause of several other diseases besides fever, both acute and chronic, we shall direct our attention in a more particular manner to this branch of the subject.

Of Cold as the cause of fever.—It becomes, in the first place, a matter of some importance to determine in what manner cold is to be considered as the cause of disease, and particularly of febrile disease. In a healthy condition of body the extremes of heat and cold, though continued for a great length of time, are borne without injury; but in feeble frames, and in irritable habits of body, the case is different. With them the simple reduction of atmospheric temperature predisposes to, and at length excites various forms of disease, but in most cases diseases of a *chronic* kind, such as dyspepsia, scrofula, chorea, and hysteria. It is seldom that we observe *fever* arising from such a cause. Fever, consequently, is not more common in northern than it is in tropical latitudes. But though cold applied to the body under common circumstances does not create fever, the case is widely different when it is associated with moisture, when it operates after a long continuance of hot and close weather, or where it is applied suddenly, partially, irregularly, or when the body is overheated and perspiring profusely, either from the nature of the climate, or from great exertion, or exposure to artificial heat.

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* The several common causes of fever now enumerated were well known to the old pathologists, and largely commented on by them. They taught, that the great sources of fever were to be found in the non-naturals, which, when receding materially from their ordinary state, created fever. The two principal of these were, 1. Air; 2. Aliment. The remaining four were held to be of less efficacy, and acted only as adjuvant or predisposing causes; viz. *secreta et excreta*, *motus et quies*, *somnus et vigilia*, *pathemata mentis*. It will be seen that modern pathologists have done little else here than alter the modes of expression.

The importance of the function of perspiration in regulating the uniformity of animal heat, and the actions of other organs, is well known to the physiologist, and is illustrated by him in various ways. It seems probable, that it is through the medium of this function that cold operates in the production of fever. It closes the pores, checks perspiration, and drives the blood in increased quantity upon the internal organs. When we look to the vast *extent* of the skin, and reflect on the immense quantity of blood with which it is supplied, it is not difficult to understand that this disturbance in the operations of the animal œconomy should be occasionally productive of bad effects, and experience shows that of these the most usual is *fever*.

When once fever is excited, it may assume different appearances. In many cases the mischief falls upon some particular organ of the body, the tonsils, the lungs, the liver, the bowels, or the joints; and is directed upon them, sometimes without any apparent cause, at other times, in consequence of some cognizable circumstance, such, for instance, as weakness in the structure of the organ, or a liability brought on by previous disease. This is an important law of the animal œconomy, which serves to explain many points in pathology, and which therefore will be frequently referred to. There are few constitutions indeed which have not some one organ more disposed to disease than another. Original conformation, age, mode of life, habits, diet, climate and season, and the disposition left by previous disorders, with many others, contribute to this, and it is one great source of the varieties of disease. According to the constitution, then, of the individual, will, in many cases, be the result of exposure to cold. When a general disturbance of all the functions of the body takes place, cold is said to generate *idiopathic fever*.

Closely allied to cold in the mode of its operation is *sudden alternation of atmospheric temperature*. This has been observed in all countries to be a fruitful source of febrile diseases, and of none more than continued fever. Nowhere is it better exemplified than in this country, so remarkable for the unsteadiness of its climate, which in the course of four-and-twenty hours not unfrequently exhibits the succession of the four seasons. These sudden changes of atmospheric temperature are particularly favourable to the production of fever; and are, *per se*, capable of exciting it. In this way we account for the greater comparative frequency of continued fevers, hæmoptysis, and inflammatory affections of various kinds in spring and autumn than at any other period of the year.

SPECIFIC CAUSES OF FEVER.

This branch of pathology was not studied with any accuracy until the last century. Sauvages was one of the earliest writers who investigated it. He divided the specific causes of fever into two kinds—miasms of the air, and miasms of the blood (miasmata *extus ex aere*, and miasmata *sponte in sanguine* enata); but he maintained that the same laws governed the operation of both sets of causes. This doctrine has met with some supporters in later times. Dr. Mason Good, in particular, has advocated it with much ingenuity; but the greater number of modern pathologists maintain that the several kinds of febrific miasmata are essentially distinct, and acknowledge different laws.

For the sake of perspicuity we shall divide the specific causes of fever into three kinds:—

1. Miasmata, originating from the soil, and called terrestrial, paludal, or marsh miasmata.

2. Miasmata, emanating from the bodies of men accumulated in a confined space, and called animal miasms.

3. Miasmata thrown off from the bodies of persons labouring under disease. These are called contagious miasmata, contagions, or morbid poisons.

These several kinds of miasms operate on the human body by means of the air. The air is tainted or vitiated by them, and in this state being received into the lungs, creates disease. Hence it is that the doctrine of febrific miasmata or exhalations is now generally known and taught under the name of *malaria.* We shall treat of them separately.

1. *Of terrestrial miasms.*—It is the generally received opinion among the pathologists of our own times, that exhalations from the soil have a natural tendency to produce fevers of an intermitting and remitting type. No reasonable doubt, indeed, can exist that, under certain circumstances, the same deleterious agents may give rise to continued fever, which may assume either an inflammatory or a typhoid character. This, however, appears to be but an exception to a fundamental law of the animal œconomy; and on this account we shall defer the detailed consideration of terrestrial miasms until we treat of intermittent and remittent fever.

2. *Of animal miasms.*—Abundant evidence exists that continued fever has been produced by the accumulated emanations from the bodies of men, originally healthy, if confined in a small space. It has been seen, for instance, to arise in crowded barracks, in transports and vessels of war containing large bodies of troops (especially when unfavourable weather compels the hatches to be closed),* in jails and workhouses. The fever thence arising has proved, in many instances, to be of the low, typhoid, and malignant kind. This principle is now so well understood, and the necessity of ventilation so well established, that we have happily but few occasions afforded of witnessing its truth.

3. *Of contagious or morbid miasms.*—There can be no doubt that by far the most frequent, as well as the most potent, of the febrific miasms are those which arise from the bodies of persons already labouring under fever. The fact of such emanations, and the theory built upon it, have, however, both been called in question. It will therefore be necessary to enter in some detail into the merits of this division of the subject.

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* See Sir William Burnett's "Account of a Contagious Fever."—London, 1831. Pages 40, 41.

OF CONTAGION.

Continued fever is frequently observed to originate where neither cold nor atmospheric vicissitudes, nor any other of the common causes of fever can reasonably be accused of producing it; as where it attacks persons shut up in close rooms with others labouring under the disease. When fever appears under such circumstances, it is said to have its origin in *contagion*. The investigation of this subject has been acknowledged from very early periods to be both obscure and difficult, and it has proved a source of endless controversy. Many of the disputed points in medicine are interesting only to the man of science; but the doctrines of contagion are of general interest, because involving practical considerations of the highest importance. Without attempting to clear up all the difficulties in the way of the inquiry, I shall be satisfied with a brief enumeration of its leading positions, and of the principal points in dispute.

1. *Early opinions concerning contagion.*—Attempts have been made to throw discredit upon the doctrine of contagion as the cause of fever, by showing that it was for a long time either unknown to, or disregarded by, physicians. It is certainly a curious fact, that for the first dawnings of information concerning it, we are indebted, not to Hippocrates or Galen, but to ancient poets and historians. Thucidydes, in his account of the epidemic fever or plague that raged in Athens during the Peloponnesian war, shows that he understood contagion in the sense in which we now use the term;—noxious matter from one morbid body producing a similar disease in another. In Plutarch's life of Pericles we read, that whilst that commander was laying siege to the city of Epidaurus, a distemper prevailed in his army, which not only carried off his own men, but *all that had intercourse with them*. Livy, in the account of a camp fever which affected the armies of the Romans and Carthaginians at the siege of Syracuse, distinctly states that it was propagated by contagion. Virgil and Lucretius employ the term *contagion* to express the manner in which a disease of sheep spread among the flock.

Medical writers were, for the most part, very inattentive to contagion until the time of Sydenham, in whose work (sect. ii, chap. 2), a distinct reference to contagion may be met with.* Boerhaave and the followers of his school were very incredulous on the subject of contagion. Their ideas about it too were imperfect and confused, from the circumstance of their blending the notion of contagion with that of marsh miasmata. Dr. Huxham, Dr. Lind, and Sir John Pringle, are the great original writers on contagion, particularly on that of continued fever. Since their time the subject has undergone the most rigid examination, and, as we have said, has given rise to the most discordant opinions.

2. *Mode of reception.*—Much confusion has been introduced into the doctrine of contagion by the employment of the term *infection*, and by the different acceptations in which contagion and infection have been taken. The facts are simply these:—Febrific miasms, emanating from the bodies of those labouring under disease, are sometimes diffusible through, or soluble in, atmospheric air; and in this state operate upon the animal œconomy, probably through the respiration. Of this kind are the miasms of measles, of scarlet fever, and typhus fever. Some again attach themselves to the natural or diseased secretions of the body, and operate by direct application to the unbroken surface; of this kind are the miasms of plague, itch, lues, gonorrhœa, Egyptian ophthalmia, and tinea capitis. Thirdly, some contagions, soluble like the last in the secretions, are apparently of a more fixed kind, and exert an agency only when the skin is *wounded*. Of this kind are the miasms of hydrophobia, and cow-pox. Lastly, there are some which will operate in all the three modes now described; of which small-pox offers the most striking illustration. To the first of these modes of communication, the term *infection* has been usually appropriated: to the second *contagion* (*a contactu*); and to the third, inoculation; but they are all intimately allied, and no advantage is gained by too closely limiting the acceptation of the two former terms.

The difficulties hence arising have been further increased by the want of a proper distinction between common contagion and specific contagion. Diseases which cannot be produced in any other way than by contagion, are said to have their origin in *specific contagion*. Of this kind are small-pox, cow-pox, measles, the plague, hydrophobia, and syphilis. Diseases which, occasionally produced by contagion, are yet sometimes owing to the operation of other causes, are said to arise from *common contagion*. Of this kind are catarrh, cynanche parotidæa, erysipelas, ophthalmia, typhus, and scarlatina. The laws of common and specific contagion are in many respects similar, but they have also their points of difference. To illustrate these, and to determine the peculiarities of each individual contagion, will be an important object in future parts of the work.

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* In 1646 Riverius, treating of petechial fever (lib. 17, cap. 1), thus expresses himself:—" Febris pestilens contagiosa etiam est, ita ut non solum a causa communi, aeris nempe et alimentorum vitio, sed etiam *ægrotantium consortio*, contrahi valeat."

3. *Doctrine of contingent contagion.*—In the last paragraph I have assumed as an established principle what has been, and what is still made the subject of keen dispute; *viz.* that typhus fever does originate from contagion, and that it is of the kind which we have called *common*, in opposition to specific contagion. Both these points have been called in question. By a few, and happily a very few, it has been contended, that the notion of a contagious origin of typhus fever is altogether unwarranted; but the views of these *anti-contagionists* are so completely at variance with the generally received opinions of medical men, and so irreconcileable with facts obvious to all mankind, that any formal refutation of them is unnecessary. On the other hand, there have been, and there continue to be, physicians who believe in the *exclusive* origin of typhus from contagion; who maintain that no disease can propagate itself by contagion which had not its own origin in contagion; in other words, who deny that common continued fever, under any, the most adverse, circumstances, can ever spread by contagion. This opinion involves the difficult, but for the most part idle question, how contagious fevers ever originated; but setting this aside, it may fairly be argued that it is neither borne out by observation nor by reasoning. There is nothing improbable in the supposition, that what originated in one mode may be afterwards propagated in another. It violates no established law of the animal œconomy. Experience on the other hand appears to favour it; and it may therefore be laid down as an important practical principle, that fever which originated in the first instance from *common* causes, may, under certain circumstances, either of local situation or constitution of body, spread

by contagion. This view of the subject is now generally adopted, and known by the name of the doctrine of *contingent contagion.* What those particular circumstances are, which thus concur to favour the development of febrile contagion, may be anticipated from remarks already offered. The principal of them are, crowded and ill-ventilated apartments, want of cleanliness and comfort, previous weakness of the affected individual, whether owing to excessive fatigue, or an unwholesome or scanty diet, and lastly the depressing passions, fear, distress, anxiety, despair.

4. *Epidemic constitution of the atmosphere.*—Many of the controverted points in the doctrine of contagion hinge upon this last question; but there is another fundamental one, of almost equal importance. Sydenham long ago urged it with great force of argument, and a due attention to his observations might have prevented much of the controversy which has lately taken place on the subject of the plague and yellow fever:—I mean that particular constitution of the atmosphere, which disposes to, or which checks, the *diffusion* of all febrile contagions, whether common or specific. It is well ascertained, that a contagious disease, even of the most malignant kind, which may have gained footing in a populous city or district, does not necessarily attack every one within its sphere, or go on progressively to the destruction of all the inhabitants. Several circumstances contribute to this; first, peculiarities of constitution, which secure certain individuals *completely* from the influence of the contagion; and, secondly, the immunity from future attacks, which in several instances of febrile contagious disease, is afforded by once undergoing it. To this law of contagion, we shall have occasion to refer more particularly, when the eruptive fevers come under consideration; but for the present it may be stated, that it applies, although with some exceptions, to typhus fever. These two circumstances assist in explaining the fact just mentioned, but they are not *fully* adequate to the effect. A certain constitution of the air, therefore, sometimes favouring, but sometimes checking, the diffusion of contagion, must be admitted as a third general principle upon which it depends.

Some physicians have pretended to find fault with this multiplication of causes for explaining a single phenomenon, and have argued that a peculiar, or, as Sydenham says, an *epidemic* *constitution* of the air, is of itself capable of explaining what others refer to the combined operation of it, and of the principle of contagion. As well might they argue, that the tree could be reared without a seed, because a peculiar condition of the soil is required for its reception and growth. Several of the most important facts in the histories of great epidemics, particularly the plague, will hereafter be illustrated by a reference to the foregoing fundamental doctrines in the laws of contagion.

5. *Modus operandi.*—Much speculation has taken place among medical authors, regarding the mode in which contagion produces its effects on the animal œconomy. It has been observed of a number of diseases notoriously arising from contagion, that they exhibit, even from an early period, symptoms of great depression of nervous energy, or of *collapse.* This is exemplified in the cases of plague, typhus, cynanche maligna, influenza, erysipelas; and it has hence been imagined, that there is in the nature of contagion something which is directly *sedative*, or depressing to the nervous energy. A more extended view of disease would show the fallacy of this as a general principle. Measles and ophthalmia, which yet exhibit all the marks of general inflammatory *excitement*, are diseases as obviously arising from contagion, as plague or typhus. The first operation of contagion may be, and probably is, upon the brain and nerves, but its *precise* effect upon them is altogether inscrutable. Still, while I offer a caution against assuming as a principle of pathology any thing sedative in the nature of contagion, I am not insensible to the importance of the fact, that cases of disease arising from *common* contagion, above all continued fevers, are more likely to be of the typhoid or malignant kind, than such as are attributable to cold, or other causes independent of contagion.

6. *Sphere of contagious influence.*—Great attention has been paid by Dr. Haygarth and others, to determine the *distance* to which the noxious effluvia extend, and at which they operate in exciting disease. There is reason to believe that this varies in different cases, and that the plague, typhus, and small-pox, have, in this respect, each their several laws. The subject, however, does not appear to have been yet investigated with sufficient accuracy, to enable us to lay down any established points of doctrine with regard to it. It is not exactly known

in all cases how far the sphere of contagious influence is affected by ventilation. In the case of *continued fever*, we are warranted in saying, that a free circulation of a pure and cool air renders the contagious particles comparatively inert, and that *concentration* is nearly, if not altogether, indispensable to the activity of contagion.* Some physicians have extended their views farther, and have maintained that there are certain chemical substances which have the power of decomposing contagious effluvia, or, at least, of rendering them, in some way or other, innoxious. Of these, the principal are acid vapours, particularly those of the nitric and acetic acids, and chlorine. *Fumigation* therefore has been recommended as a powerful means of counteracting contagion. The theory upon which it has been introduced is exceedingly doubtful, and the practice far from being generally applicable, acid vapours of all kinds being more or less injurious to breathing. If fumigation is adopted as a substitute for thorough ventilation, it may prove injurious; if only superadded, it is perhaps superfluous.

7. *Nature of contagion.*—Of the intimate nature of the contagious particles which arise from bodies in a state of disease, and which produce a like disease in others, we know nothing. Huxham threw out the idea that typhoid miasmata were only highly volatilized and subtilized animal salts (subcarbonate of ammonia), and from the general impression of the disinfecting powers of acid vapours, this theory would seem to derive some support.

8. *Incubation of morbid poisons.*—The interval that elapses between the reception of the poison or contagious miasm into the body, and the development of symptoms, has been called the latent period, or more properly the period of *incubation*. Various attempts have been made to ascertain the usual duration of this period. It has been satisfactorily shown that in this respect each particular contagion acknowledges a different law. The incubative period of typhoid and malignant fever appears to fluctuate between seven and eighteen days; the average period is ten days.† Physicians have also attempted to determine at what particular period of a disease its contagion

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* On this subject consult "Facts and Observations regarding Infection," by Sir G. Blane, in the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge," vol. iii. page 425.

† Essay on the Incubation of Morbific Germs. London Medical Gazette, vol. ix. page 746.

is the most active, and when the body ceases altogether to afford contagious matter. This point it would be of much importance to ascertain, as it would indicate when a patient might safely be permitted to mix in society; but unfortunately there do not appear to be sufficient data to enable us to decide the question with any degree of accuracy.

9. *Attachment to fomites.*—The last subject of inquiry which the general doctrine of contagion offers, is the attachment of contagious particles to certain bodies, thence called *fomites*, where they lurk, often for a very long period of time, and subsequently renew the disease with all its former, or even with increased virulence. This curious fact in the history of contagion is established upon the most unquestionable evidence. The principle, too, appears to be of more general application than any other which the doctrine of contagion involves. The plague and typhus, small-pox and scarlet fever, ophthalmia and porrigo, afford the most familiar illustrations of it; but it is doubtful if there is any species of contagious disease, which may not be communicated through the medium of fomites. They may be either hard or soft bodies. The walls and wainscoting of the room, beds and bed-furniture, the furniture of the room, and the clothes of the patient, are those against which we are chiefly to be on our guard. It is believed that the clothes of an individual, who is himself unsusceptible of the disease, may in some instances become the fomites of its contagion. In this manner the contagion of puerperal peritonitis has been frequently and fatally disseminated.

CHAP. IV.

TREATMENT OF CONTINUED FEVER.

Necessity of Treatment in Fever. Indications of cure. The antiphlogistic Regimen. Possibility of cutting short a Fever. Remarks on the different means resorted to in the Treatment of Continued Fever: Emetics; Purgatives; Saline Diaphoretics and Diuretics; the Abstraction of blood; Cold affusion; Cordials and Tonics; Opiates; Blisters. Treatment of Complex Fevers. Relief of Symptoms. Management of the stage of Convalescence.

It is well remarked by Dr. Cullen, that though in every fever which runs its full course, there is an effort of nature of a salutary tendency, and though from hence it might be inferred that the cure of fevers should be left to the operations of nature, or that *art* should be directed only to support and regulate them, it yet requires but a moderate share of observation to understand that these are very precarious, and often wholly insufficient to overcome the disease. Permanent derangement of the function or structure of an organ is sometimes occasioned before such operations are set up, and a reliance upon them therefore often leads to negligent and inert practice. The necessity of treatment in fever is now indeed generally acknowledged. Occasionally, the natural tendency of fever to terminate favourably may be kept in view with great advantage; as, for instance, in the latter stages of *simple fever*, where measures of depletion are unnecessary, and wine and cordials would be doubtful remedies. In most cases, however, the operations of nature may be superseded by the well-directed exertions of art.

To point out what these are, to what extent they may be carried, and how they must be varied to meet the varying forms in which fever presents itself, is my object in the present chapter. It is to be regretted that the nature of the subject renders it difficult to lay down any specific directions for the guidance of the student. All that is now proposed is to notice the principal means that are resorted to in the cure of fever, and to add such observations as may throw light on the objects for which they are employed, and point out the necessary cautions in their administration. In no disease is so much left to the discretion of the practitioner as in continued fever.

The general objects to be kept in view in the treatment of any disease are called, in medical language, the *indications of cure*. In the case of fever, they have, for the most part, been drawn from the hypothetical views of authors regarding the nature and proximate cause of fever; but such indications of cure are little calculated to direct us in the choice and application of remedies. The views which have been here taken of the varieties of continued fever, and of the circumstances which modify its symptoms, suggest the following as the simplest indications of cure in fever:—

1st. To moderate the violence of arterial excitement.

2nd. To support the powers of the system.

3rd. To obviate local inflammations and congestions.

4th. To relieve urgent symptoms.

An important step towards the attainment of all these objects is a strict attention to the ANTIPHLOGISTIC REGIMEN, under which term physicians include a great variety of details proper to be observed, not only in continued fevers, but in all febrile affections whatever. This regimen is of itself sufficient to cure a number of the slighter kinds of febrile disease, such as catarrh, and sore throat. It consists in avoiding or moderating those irritations, which in one degree or another are almost constantly applied to the body. Dr. Cullen has divided them into three classes:—impressions made upon our senses;—the exercise of the body and mind;—aliments. In all fevers, therefore, care is to be taken to guard against external heat, and such impressions upon the eye and ear, as would prove painful to the patient, and aggravate the symptoms of his disease. The popular prejudice against the admission of fresh air, the use of cold washing, and the frequent changes of linen and bedclothes in cases of fever, has subsided; but for a long time it exerted a most pernicious influence over the treatment of fever.

All exertions of body and mind are during fever to be strictly forbidden. Their continued operation tends manifestly to exhaust the nervous power, already sufficiently reduced by the mere presence of fever. The horizontal posture is to be enforced. The presence of aliment proving always a stimulus to the system, abstinence is to be recommended, particularly from animal food in the shape of broths and jellies, which are too often had recourse to in the early stages of fever. They load the stomach, increase the disposition to nausea and vomiting, accelerate the pulse, augment the heat of the skin, and occasion headache, flatus, tormina, and many other unpleasant symptoms. The diet therefore should consist of roasted apples, sago, arrow root, tapioca, and gruel. Grapes, oranges, and ripe fruits in their season, may also be permitted. Thirst is to be allayed by light, cool, and subacid drinks, such as tea, apple tea, barley water, toast water, and lemonade. The utmost cleanliness is to be observed in the patient's person, and in everything around him.

Before proceeding to a detail of the other means which are resorted to in the treatment of continued fever, it is proper to inquire, how far it is possible, by a vigorous employment of measures in the early stages of a fever, to cut it short. The question has been much agitated, and there are many authors who contend that it can frequently be effected. It may fairly be admitted, that there are mild attacks of fever, particularly such as occur in young persons, where a prompt evacuation appears to have the effect of interrupting that chain of morbid actions, which ends in the full development of fever; but it may reasonably be doubted, whether any of the severer cases of continued fever could have been *cut short* by any exertion of art; those, for instance, either arising from contagion or from common causes, which extend to fourteen or twenty-one days. Were it possible to do so in a few cases, it should yet be borne in mind, that active treatment in the majority of cases of continued fever, even though early resorted to, is chiefly serviceable, not in shortening the course, but moderating the *violence* of the disease. It was the remark of a very shrewd physician, that the skilful pilot does not pretend to *quell* the storm, but is content with steering his ship in safety through it.

The general principles that are to guide the physician in the management of fevers have been already detailed (p. 15). It now remains that we apply these to the case of *continued* fever. We shall consider the several measures resorted to for its relief in the following order:—1. Emetics. 2. Purgatives. 3. Saline diaphoretics and diuretics. 4. Bleeding, general and topical. 5. The cold affusion. 6. Cordials. 7. Opiates. 8. Blisters.

1. *Emetics.*—When the opportunity offers of administering remedies in the first days of fever, an emetic may often be given with advantage, especially where the *type* of the fever is mild. An emetic clears the stomach of offending matters or sordes, which may be either undigested aliment, bile, thickened and vitiated mucus, or its own thin acid or acrid secretions. Besides which, an emetic has the additional advantage of determining the blood to the surface, and in this way relieving the oppressed state of internal organs. A powerful emetic may sometimes give the system a shock sufficient to alter the course of the symptoms, and even to cut the fever short. This practice, however, is not without its dangers. In some cases it determines morbid action to the stomach, and renders that organ *irritable* during the whole course of the fever. At other times an emetic brings on local inflammation in some important viscus, on the same principle that it forces out a sweat. As a general rule, we are not justified in giving an emetic, unless we have reason to think the stomach is *foul.* The

symptoms of a foul stomach are, a bad taste in the mouth, a feeling of nausea, and headache. When these symptoms usher in a fever, the following draught may be administered:—

℞ Pulveris ipecacuanhæ, ℈i.
Aquæ menthæ sativæ, ℥x. Misce.

If the skin be very dry, we may join antimony to the ipecacuanha, as in the following form:—

℞ Pulveris ipecacuanhæ, gr. xvi.
Vini antimonii tartariz. ʒij.
Aquæ menthæ pulegii, ℥i. Misce.

2. *Purgatives.*—The propriety of exhibiting purgative medicines through the whole course of continued fever is universally acknowledged. They are useful in various ways:—they diminish, in an early period of the disease, the mass of circulating fluids; lower the *tone* of the whole system; and expel from the body aliment, the fermentation or putrefaction of which would necessarily aggravate the sufferings of the patient. At a more advanced stage they evacuate those morbid secretions of the liver and intestines, which are continually taking place, and the lodgment of which in the bowels would tend greatly to *oppress* the nervous system, and, therefore, increase the danger. It is not to be imagined, however, that the administration of purgatives in fever is altogether devoid of risk. They should never be prescribed without duly considering the circumstances of the case, nor without some adequate motive. In the early stages of fever, purgative medicines may be given with freedom; but in the latter stages of protracted fever, they are often injurious by the drain which they occasion from the general system. The stomach is sometimes so irritable, that ordinary aperients are rejected. In this case the bowels are to be opened by injections. It is indispensably requisite to watch the degree to which the abdominal viscera are affected, and cautiously to refrain from them (or at all events from the most active of them, such as jalap, colocynth, or calomel) whenever inflammatory action is present, or any *disposition* to it, as evinced by diarrhœa, or tenderness of the abdomen. If the symptoms are such as appear to demand relief by the bowels, and the practitioner is fearful of latent inflammatory action, he will have recourse to castor oil, or rhubarb, which experience has shown to be the least irritating of the aperients in common use.

The practitioner will be guided in his choice of purgatives by a variety of considerations, of which the following may be taken as a sample.

Mercurial purgatives are especially required when the tongue is much coated, the secretions of the mouth clammy, and the stools dark and offensive. Calomel will be preferred in strong and plethoric habits. The blue pill, or hydr. cum creta, in weak and irritable habits.

When the pulse is active and the skin dry, the following combination is very effectual:—

℞ Hydrarg. submur.
Pulveris Jacobi *sing.* gr. iv.
Extracti coloc. comp. gr. iij. Misce.
Fiant pilulæ duæ.

In the synochal type of fever, where the object is to reduce rapidly the action of the heart and arteries, calomel may be given with jalap, as in the following form:—

℞ Hydrarg. submur. gr. v.
Jalapii pulv. ℈i. Misce.

In the typhoid fevers of this country calomel may be given in smaller doses united to rhubarb; as thus:—

℞ Hydrarg. submur. gr. iij.
Pulveris Jacobi, gr. ij.
——— rhei, gr. x. Misce.

One of the most generally useful of all the compound purgative medicines in fever is the well-known black dose:—

℞ Infusi sennæ compos. ʒx.
Magnesiæ sulphatis, ℥ss.
Tincturæ rhei, ʒi.
Syrupi, ʒi. Misce.

Other combinations of purgative medicines adapted to the various habits of individuals and the several kinds and stages of fever will be found in the Appendix.

3. *Saline Diaphoretics and Diuretics.*—Saline medicines, especially the citrate of potash, the acetate of ammonia, and nitre, are largely employed in the treatment of fever. They cannot be expected to control the progress of the severe inflammatory or typhoid forms of fever, but their efficacy in the relief of common continued fever is proved by daily experience. They allay thirst, direct the fluids to the skin or [illegible], and to a certain extent relieve the general heat and [illegible] of the system. They should be repeated at short

intervals (three, four, or six hours). Where the stomach is irritable, they may be taken in the state of effervescence. Saline medicines should constitute the basis of our treatment throughout the early and middle periods of fever. The following are the usual forms of administering such remedies:—

℞ Subcarb. potassæ, ℈i.
Succi limonum, ℥ss.
Sacchari albi, ℈i.
Aquæ destillatæ, ℥i. Misce.
Fiat haustus tertia quaque hora repetendus.

℞ Liquoris ammoniæ acetatis, ʒiij.
Misturæ camphoræ,
Aquæ, āā ℥ss.
Syrupi rhœados, ʒi.
Fiat haustus sextis horis sumendus.

Antimony.—This drug was long distinguished as a *febrifuge* of great virtue; but latterly an opinion has prevailed, that its efficacy in the treatment of fever is rather a matter of tradition than the dictate of experience. To this I cannot subscribe, having had frequent opportunities of satisfying myself of its claims upon our confidence. It occasionally acts upon the stomach and bowels; but independent of this, antimony proves useful in fever, apparently by some power of diffusing and equalizing the circulation. James's Powder (the protoxyd) is, I believe, the best form in which it can be administered. In combination with small doses of calomel, and given either at night, or every six hours, according to the urgency of the symptoms, its efficacy is often manifested by an improved appearance of the tongue and alvine evacuations. The antimonial wine is also a valuable remedy in fever, and coinciding in its effects with the saline draughts already adverted to, is usually administered in combination with them, as in the following formula:—

℞ Aquæ ammoniæ acetatæ, ʒij.
—— menthæ piperitæ,
—— destillatæ, *sing.* ℥ss.
Vini antim. tartar. ♏xx.
Syrupi ʒi. Misce.
Fiat haustus quartis horis sumendus.

4. *Blood-letting.*—Of the different means of fulfilling the indications of cure formerly laid down, the most powerful is the *abstraction of blood.* Every part of the treatment of fever has been the subject of controversy, but the employment of blood-

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by a variety of considerations, of which th
taken as a sample.

Mercurial purgatives are especially re
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stools dark and offensive. Calomel w
and plethoric habits. The blue p
weak and irritable habits.

When the pulse is active an
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Pulveris Jacol
Extracti col
Fiant pilulæ

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bleeding. Some have urged
preference to bleeding at the
sable where the determination of
ngly marked; but as a general
opening the temporal artery is
mmended, except under particular
even when practised by skilful
quantity of blood cannot always be
mated accurately. There is, lastly,
in securing the artery, nor does it
peculiar benefit resulting from the
these obvious disadvantages.
ontinued and typhus fever.—These
require the adoption of blood-letting.
cases, especially of the latter, would be
many, to say the least, it is uncalled for.
hand, there are some, and those among the
fall under our observation, which as

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bject more clearly stated than in the writings of

ts for which blood-letting is instituted in the com-
fevers of this country, and in genuine typhus,
recommend it very early in the disease, in
hort at once. This is a fortunate result
witnessed; but it is one which can
legitimate object of blood-letting
king those dispositions to inflam-
so often met with in severe cases,
me on insidiously, at other times sud-
uctive in either way of serious mischief to
n. This applies with peculiar force to those
the brain which are supposed to depend on con-
r *sub-acute* inflammation; for the delicacy of its
ure exposes it readily to injury; and injury of the brain,
en of the slightest kind, is always to be dreaded. Nor is it less applicable to the severe complication of fever with bronchial affection, so common in all variable climates. It is frequently observed, that a judicious abstraction of blood in the early stages of fever not only diminishes the headache, and great sensibility to light and sound—the cough—and the pain and fulness of the abdomen, attendant upon many fevers, but it apparently shortens the course of the disease, and, more obviously still, the period of convalescence.

It is, however, at the onset of the fever, that is to say, between the first and fourth day, when the good effects of blood-letting are most unequivocally exhibited. At this period of the disease the powers of life may be *oppressed*, but it is not probable that they are yet much *exhausted*. From this they will recoil, if the oppressive load of the disease be quickly removed.* But blood-letting may sometimes be resorted to at more advanced periods of the disease. Great nicety indeed is required in distinguishing the symptoms that demand it, and in apportioning the evacuation to the extent of local disease, and the general powers of the constitution. Of the comparative advantages resulting from general and local bleeding, in the continued fevers of this country, it is difficult to speak with precision; but for the most part it will be found preferable to employ *local bleeding*, when the object in view is the relief of

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* See Bateman on "the Contagious Fever of this Country," page 102; a work containing a most judicious exposition of the principles and details of the treatment of continued fever.

letting is that which of all others has been
disputed. As it is however of the greatest [illegible]
clear ideas regarding it, I shall make an [illegible]
the utility of blood-letting in fever, and to [illegible]
stances under which it may be proper to [illegible]

Bleeding in synocha.—There cannot [illegible]
necessity of blood-letting in the inflam[illegible]
climates. The violence of that dise[illegible]
progress, and the high degree of [illegible]
characterize it, call for the adoption [illegible]
at once powerful and immediate in [illegible]
attack, therefore, blood is to be [illegible] of
extent of twenty or thirty ounces. [illegible] wever,
it is frequently necessary to repe[illegible] *invasion*
the extent of the evacuation [illegible] rom general
violence of the symptoms, par[illegible] coagulated at
ache, and the fulness and ten[illegible] rcumspection is
diminished without delay; [illegible] n the patient is
be neglected, it is upon ven[illegible] intemperate habits,
be placed. The removal [illegible] In judging of the
ing, are the signs of a [illegible] climates, the cha-
opening the temporal a[illegible] neglected. In some
arm, and it is certainl[illegible] depletion which in
blood to the head is [illegible] powers of life to a
rule it may be remark[illegible]
not an operation to [illegible] upon which great
circumstances. It [illegible] treatment of fever, is
hands. The requ[illegible] and fatigue to the
obtained speedily. [illegible] very generally super-
often considerabl[illegible] sponging. From
appear that ther[illegible] It is grateful
operation to co[illegible] body, takes off

Bleeding in [illegible] so much irrita-
fevers do not [illegible] slumber, and
A large prop[illegible] whenever the
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But, on th[illegible] exquisite forms
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* Nov[illegible]
Bagliv[illegible]

form some idea of this from the well-
lotions applied to the head, in
and restlessness, in the com-

reat weakness which prevails
free employment of cordial
articularly wine, sulphuric and
of ammonia, camphor, musk,
atics. It is now generally acknow-
minate use of stimulant remedies in
ious; that they have a tendency to
those local determinations from which
be apprehended; and, therefore, that their
to be regulated by circumstances, no less than
l-letting. The period of the fever, the particular
which it appears, its exciting cause, the nature of
mic, the age, constitution, and former habits of the
are all in their turn to be taken into account; but we
hiefly to be guided by the *character of the symptoms*, and
e *effects of the remedies*.

1. In the state of true collapse, marked by cold and clammy sweats, a feeble wavering pulse, oppressive breathing, the supine posture of the patient, a moist, brown, and loaded state of the tongue, with feeling of exhaustion, stimulants, especially wine or brandy, are not only beneficial, but absolutely necessary. Such symptoms are clearly indicative of a failure of the powers of life, and unless stimulants are duly supplied in quantities proportioned to the exigencies of the case, the patient rapidly sinks. Six ounces of wine may be given daily under these circumstances, at proper intervals. 2. Those cases of typhus which are accompanied by petechiæ, or the large livid blotches called vibices,—in other words, by what we have denominated the symptoms of malignancy and of putrescency, are benefited by the steady and moderate exhibition of wine, bark, and aromatics. 3. Wine is often required to support the patient under the exhaustion occasioned by a sudden diarrhœa, or by the bleeding necessary to subdue those local inflammations which frequently arise in feeble habits, and in the advanced stages of the disorder. 4. There is a fourth class of symptoms which has been supposed to indicate the propriety of a similar plan of treatment; viz., those which denote irregularity in the action of the

nervous power, such as subsultus tendinum, picking of the bed-clothes, and a tremulous hand and tongue. These are distinctly symptomatic of cerebral irritation, of a state which is indeed sometimes relieved, but not unfrequently aggravated, by wine and cordials. If these symptoms are present along with a soft pulse and cool skin, wine is indicated. On the other hand, if there be a parched tongue, a hot and dry skin, and any degree of *sharpness* of the pulse, wine, even in small quantity, is generally hurtful. It is a state which may often be better combated by local bleeding, blistering, and laxatives. Wine is indeed at most times a doubtful remedy in fever, which should never be persevered in, unless the signs of improvement are very unequivocal.

The effects of all stimulant remedies in fever are to be carefully watched. Even when most essentially required, as in the lowest state of collapse, they will sometimes occasion a degree of excitement, from which danger may be apprehended. If the tongue under their exhibition becomes dry, and delirium increases, they should be immediately diminished, or altogether withdrawn. If the patient is upon the whole improving, this should satisfy us. Any attempt to accelerate his recovery by increasing the stimulus will only risk his safety.

Various other stimulants besides wine have been occasionally employed in the treatment of fever. Camphor, with the subcarbonate of ammonia and the aromatic confection, is one of the combinations in most common use.

℞ Misturæ camphoræ, ℥x.
Ammoniæ subcarbonatis, gr. v.
Confectionis aromaticæ, gr. xv. Misce.
Fiat haustus ter die sumendus.

In cases where it is desirable to afford the patient the comfort of a gentle stimulant less powerful than wine, the sulphuric ether is that which may be most safely resorted to. It may be given at first in union with saline medicines, and afterwards in camphor mixture. Sulphate of quinine, and other preparations of bark, are seldom given in fever unless there be a tendency to gangrene. Wherever fever is complicated with local inflammation, bark is pernicious, as tending to excite and aggravate arterial action.

7. *Opiates.*—From the want of sleep and restlessness, which so generally prevail in fever, and prove so distressing to the patient, opiates might be expected to be useful, but experience

teaches otherwise. In the early stages of the disease they are quite inadmissible; and even in the latter, their employment is often followed by an aggravation instead of a relief of the symptoms. Opium frequently augments the heat and thirst, constipates the bowels, and increases delirium. In some few cases indeed a dose of laudanum, given at bed time, and combined with a saline diaphoretic, is advisable; as for instance, when, after purging and local bleeding, great restlessness continues, attended with a low muttering delirium, aggravated towards night. If on the following morning the tongue appears dry and smooth, the opiate was probably injurious; if moist, it may safely be repeated.

8. *Blisters.*—In particular states of fever, the efficacy of blisters has been long acknowledged, and several different explanations of the fact have been offered. They have been supposed to act as stimulants, or to have a power of relieving spasm, and they have accordingly been recommended by some at any period of continued fever. By others, they have been principally resorted to in the latter stages of the disease, their good effects being then traced to a principle of *revulsion*, and they have been chiefly applied by such practitioners to the calves of the legs and the soles of the feet. It is now, however, generally agreed, that blisters are only useful in obviating those local congestions and inflammations which occur in the course of fever, and more particularly within the head, bringing on that state of cerebral irritation which is marked, sometimes by delirium accompanied with much restlessness and attempts to get out of bed, and occasionally by the opposite, but no less formidable symptom of *stupor*. Under these circumstances, great benefit is experienced from the application of a blister to the nape of the neck; besides which, the head should be shaved, and cloths dipped in a cold lotion constantly applied to it. In cases of local determination to any organ of the thorax or abdomen, a blister over the affected part will prove equally advantageous. In the low forms of fever a blistered surface often degenerates into a troublesome ulcer. When blisters either fail to rise, or, having risen, fail to heal kindly, the prognosis is unfavourable.

Treatment of complex fevers.—When fever becomes complicated with local inflammation or congestion, more especially when symptomatic bronchitis has set in, or the mucous membrane of the bowels has run into follicular ulceration, the utmost skill of the physician is called forth. To specify the several additional measures required under these circumstances would, however, be only to anticipate what must come under more detailed investigation hereafter. As a general rule it may be remarked, that the local inflammations engendered in the course of fever neither require nor bear the same active practice as idiopathic inflammations. The powers of the patient must be saved for that conflict which will ensue when the local affection has subsided. The topical abstraction of blood, therefore, is generally preferable to the loss of blood from the arm.

Relief of urgent symptoms.—In the progress of continued fever, symptoms occasionally arise, which, from their urgency, demand particular attention. I shall select a few of these, and point out briefly the appropriate remedies for them.

1. *Headache* is best relieved by the application of leeches to the temples, followed by the diligent application of cold lotions to the shaved scalp.

2. *Vomiting* is relieved by effervescing draughts, containing small doses of laudanum. A blister to the epigastrium is also serviceable. In obstinate cases it becomes necessary to abstain altogether from medicine, and even from nourishment of the mildest kind, for a considerable time.

3. *Hiccup* will sometimes yield to small doses of rhubarb.

4. *Diarrhœa* indicates an inflammatory condition of the bowels, and is to be combated by the application of leeches to the abdomen, and by soothing and emollient medicines. Four grains of the Pulv. ipecac. compos. may be given every four hours. Bloody stools require the administration of opium, combined with small doses of superacetate of lead.

5. *Tenesmus* sometimes occasions great inconvenience towards the close of severe fevers. It is aggravated by purgatives and enemata, even of the mildest kind. It yields to time and a restorative diet.

6. *Tympanitic distension* is a formidable symptom, which purgatives tend to aggravate. Carminative injections (such as equal parts of mistura assafœtidæ and gruel) afford some degree of temporary relief.

7. *Cough* is alleviated by demulcents, such as the almond emulsion with paregoric elixir.

Management of the convalescence from fever.—The danger of relapse in fever is so great, that every thing likely to produce excitement should be carefully avoided. The patient should not be permitted to rise from bed until his strength be considerably recruited. His diet should be carefully regulated; for the stomach, during convalescence, partakes of the general debility, and indulgence of the appetite often leads to oppression and renewal of fever. The greatest caution, therefore, is requisite in giving even the lightest tonics, which too often stimulate the stomach to receive what the powers of the system are afterwards unable to assimilate. Attention should be paid to the bowels, and a mild laxative, containing rhubarb, administered as occasion requires.*

CHAP. V.

OF THE PLAGUE.

Its nosological Character. Origin and History. Phenomena of the Plague. Mild Form of Plague. Effects of different Remedies. Of the Contagion of Plague. Laws of pestilential Contagion. Epidemic Visitations of Plague.

The Plague, classed by Dr. Cullen among the exanthemata, is yet, in strict nosological language, a continued fever closely allied to typhus, and therefore demanding notice more particularly in this place. It may be viewed, indeed, without over refinement, as the link which connects the two great classes of idiopathic fevers. In its mode of propagation, it resembles the exanthemata. In its symptoms and progress, we shall trace an obvious resemblance to those of typhus.

History of plague.—The historical details connected with this very singular disease are highly interesting. The ancients do not appear to have been acquainted with it, but it must be confessed that its origin and early history are involved in much obscurity. For many centuries past it has been *endemic* on the shores of the Mediterranean; and though it has occasionally shown itself in other latitudes, as at Moscow in 1771, and in this country in 1665, yet in that situation only is it at all times to be met with. Grand Cairo may be considered as the great *nidus* of the contagion of plague, and from this point, at particular seasons, it spreads with a malignity scarcely to be estimated. The interest with which such a disease must at all times be viewed, has much heightened of late years from the circumstance of its having appeared in our own settlements (in 1813 at Malta, in 1816 in the Ionian Islands), and been subjected there, as well as in Egypt in 1800, to the observations of our countrymen. The symptoms of this disease, the peculiarities in the laws of the contagion of the plague, the circumstances which appear to favour its diffusion, and the consequent appearance of the disease as an *epidemic*, are the points to which my attention will, in this chapter, be principally directed.

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* The reader is referred for more detailed information on the several subjects treated of in this chapter to the very masterly dissertation on Fever by Dr. Tweedie, to be found in the Cyclopædia of Practical Medicine. This Essay contains the fullest and latest exposition of all that is known regarding the history and treatment of the fevers of this country.

Phenomena of plague.—A feeling of great languor and lassitude ushers in the attack of plague, which, for the most part, happens towards evening. There is always a cold stage, though it is seldom of long duration. Heat of skin, headache, and giddiness succeed. The pain of the head is referred to the temples and eye-brows. The eyes appear heavy, dull, and muddy. The expression of countenance changes in a remarkable manner. Sometimes there is a wild and furious look; sometimes a look claiming commiseration, with a sunk eye and contracted feature. The most striking of all the early symptoms of plague is the *staggering*, and the sudden extreme prostration of strength. A strong tendency to void the urine is generally noticed. The stomach is very irritable, and rejects almost every thing presented to it. The tongue is white and moist. The bowels are sometimes torpid, and at other times loose, the evacuations being always highly offensive. The speech falters. The pulse is at first small, hard, and quick; but after the appearance of buboes it often becomes fuller and softer. It is sometimes intermittent. In point of frequency, its average may be stated at 100. The heat of skin is seldom very intense. The head is occasionally perfectly clear and collected. At other times, stupor occurs immediately after the formation of the hot fit. Some cases of [illegible]se are ushered in by a violent fit of mania. The greatest indifference with regard to recovery prevails, and is always reckoned a most unfavourable symptom.

After one, two, or at furthest three days, pains in the groins and axillæ announce the formation of *buboes*. These pains are often highly acute, and unless speedily followed by the swelling of the gland, the patient dies delirious. In women the axillæ, in men the groins, are chiefly affected. Carbuncles appear at the same time, but indifferently on all parts of the body. Petechiæ and vibices are much more frequent than carbuncles, which, it appears, do not occur above once in twenty cases. The fatal termination is sometimes preceded by violent hæmorrhages from the mouth, nose, or intestines.*

The duration of the disease is very various. A few cases are on record, where the patient died within a few hours from the invasion. To many it proves fatal during the first paroxysm or period, which includes the time from the evening of the attack to the close of the following night. The third and fifth days are, however, upon the whole, those of the greatest danger. The former is the usual period of the appearance of bubo; the latter, of the abatement of the febrile symptoms. If the patient survives the fifth day, and the bubo is fully formed, he may be considered as nearly out of danger. The convalescence indeed is always very tedious, from the extreme debility which the disease leaves; and the patient's life is not unfrequently again put into imminent hazard from the occurrence of gangrene in the extremities.

Such is the train of symptoms which characterize this disease. Some idea of the extent of the mortality which it occasions may be formed from the fact, that out of 700 persons attacked by it in the district of Leftimo in Corfu, in 1815, seventy only were saved, and 630 died. It is curious, however, to observe, that occasionally this very formidable disease assumes a totally different character. The *mild* form of plague is not peculiar to any families, or classes of persons, or districts, or periods of the epidemic. It is more commonly met with towards its decline, but is observed occasionally even from the very first. Buboes form in this variety of the disease about the usual period, generally with a good deal of inflammation, and go on to suppuration. Carbuncles and petechiæ, however, are never observed to attend it. It is marked by the same set of febrile symptoms as characterize the malignant form of the disease, but they are all milder in degree. It terminates occasionally by a critical discharge, but does not appear to require, or to be at all affected by, any kind of medical treatment. A few cases have been recorded of plague appearing in the form of buboes, without any constitutional affection.

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* This detail of the symptoms of Plague is abstracted, by permission of Sir J. M'Grigor, from the official reports of the epidemic of 1816, transmitted to the Army Medical Board by the officers in charge of the Plague Hospitals in the Ionian Islands.

A circumstance of some importance, as tending to point out the analogy between the plague and other forms of continued fever, has been noticed by Sir James M'Grigor, in his Medical Sketches of the Expedition from India to Egypt:—I mean the effect of season, ventilation, and peculiarities of soil, in modifying the character of the symptoms. The cases of plague which occurred in the cold months of the year were marked by an inflammatory diathesis. Those which were sent in from crowded hospitals were attended from the very first with low or malignant symptoms. Those which occurred when the army was encamped near the marshes of El-Hammed showed a kind of remittent or intermittent type.

Morbid anatomy of plague.—Some dissections have been made of the bodies of persons who have died of the plague, but they afford little or no instruction. The few morbid appearances noticed were in the cavity of the abdomen. The cause of death in malignant fevers is rather to be found in the poisoned condition of the fluids, than in any disorganised state of the viscera.

Treatment of plague.—In the malignant form of plague, every variety of treatment has been tried, but with so little effect, that it may be considered as a disease nearly beyond the reach of medicine. The violent headache which occurs during the first twenty-four hours, seems to point out the propriety of blood-letting, and it is recommended by the general custom of Turkish practitioners; but in the hands of English surgeons it proved of no avail. In the cases in which it was tried, it did not appear, however, to make matters worse. The blood first drawn was generally sizy, but never afterwards.

Where mercury can be brought to affect the mouth, it appears to be of some service, but it is seldom that sufficient is afforded for this specific effect of the remedy. Ether audanum arc valuable medicines in allaying the irritability of the stomach. Wine and opium are of no use during the violence of the disease, and bark can seldom be retained. This is much to be regretted, for wherever it can be made to stay on the stomach, even in those severe cases where carbuncles and vibices appear, its good effects are conspicuous. Camphor, bark, and wine, are given with much advantage during the period of convalescence. Emetics, purgatives, and the cold affusion, have been tried, but it does not appear that they are of any service. Diaphoresis can seldom be produced, owing to the disposition to vomit; but wherever it can be procured, the symptoms seem to be mitigated by it.

Great attention is always paid to the local treatment of the buboes. They seldom go back, and it is usual, therefore, to employ means with the view of accelerating their suppuration. For this purpose the Turks are in the habit of applying the actual cautery, but it did not answer in the practice of our army surgeons. The irritation occasioned by it was excessive, so as sometimes to hasten the patient's death. Blisters and poultices are certainly preferable; but, upon the whole, it is quite obvious, that as little can be done in the way of surgical treatment in the plague, as by internal medicines.

Causes of plague.—The general resemblance which plague bears to those malignant forms of typhus fever, which are occasionally witnessed in cold countries, must be abundantly obvious. The great distinction between them lies in the occurrence of buboes; in other words, in the tendency which plague has to affect the lymphatic system. This line of distinction, however, is so broad, that plague is to be viewed as a continued fever, allied indeed to typhus, but differing from it in the important circumstance of having its origin in *specific* contagion. That the plague is a highly contagious disease cannot for a moment be made a matter of dispute; but some physicians have maintained, that it is not a fever *sui generis*, generated by a specific contagion, but only an aggravated form of typhus; in support of which opinion it has been argued, that cases of typhus complicated with buboes have sometimes been observed in this country.* This idea, however, is entertained only by a few, and the doctrine of a specific contagion in plague is that which is now generally received. Its laws have been investigated with some accuracy, and the following seem to be the most important of those which have hitherto been ascertained.

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* See Minutes of Evidence taken before the House of Commons on the Question of Plague. 1819.

Laws of pestilential contagion.—1. The *latent period* of the contagion of plague, or that between communication with an affected individual, and the appearance of symptoms, is extremely short, and liable to very little variation. It is scarcely ever less than three days, and it seldom exceeds six. Instances indeed are recorded of the disease not appearing until the tenth day, but these cases are rare.

2. The contagion spreads to a very small distance only from the body of the patient. The consequence of which is, that the disease is seldom, if ever, communicated except by actual *contact*.

3. The dead body does not communicate the disease so readily as the living. This appears to be well understood in Turkey; but that the contagion is sometimes received from the dead body, cannot, I apprehend, be doubted.

4. The contagion of plague is readily imparted to *fomites*, in which it may lurk for a very long time, more particularly if secluded from the air.

5. Re-infection is occasionally observed, but, upon the whole, is not common. The individuals throughout Turkey who are employed about the persons of plague patients, have, with very few exceptions, undergone the disease. Sufficient instances, however, are met with of persons taking the disease a second time, and even dying of the second attack, to make all who have previously had it, cautious in their intercourse with the affected.

6. Plague, like the small-pox, may be taken by inoculation. The experiment has been tried in several instances, but in none has it succeeded in mitigating the disorder. Dr. Whyte in 1801, and Mr. Van Rosenfeldt in 1817, paid with their lives the forfeit of their temerity. The former died on the fourth, the latter on the second day of the disease.

Epidemic visitations of plague.—Plague is endemic in Egypt; and both at Cairo and Constantinople cases of the disease are almost always to be met with. In other words, they occur *sporadically* in those places. While the English army was in Egypt in 1801, cases of plague were continually occurring; but the judicious regulations then adopted, coupled with the state of the air, prevented the disease from spreading, and the troops suffered but very little. At Malta, however, in 1813, and in the Ionian Islands during the years 1815-16, the plague raged epidemically; and from early times it has been observed, that at certain seasons the plague disseminates itself with extraordinary malignity. To this nothing appears to give any effectual check but the enforcement of severe measures by the strong arm of military power. At Marseilles in 1720, at Messina in 1743, at Grand Cairo in 1759, and on various other occasions, when the plague was suffered to advance without any such control, the ravages which it committed were of incalculable magnitude. The establishment of a cordon around the whole of the affected district, the rigid seclusion of families, the immediate removal of all suspected cases into quarantine, and of all decided cases to the lazaret, are the preventive measures of most obvious importance. By these means promptly and vigorously exerted, the extension of the plague in the Ionian Islands has been several times, in the course of the last ten years, prevented; and it is now no longer questionable, that it might in the same manner be effectually checked in every part of the Turkish empire.

Many inquiries have been instituted with the view of determining, if possible, what the circumstances are which render the plague epidemic at certain seasons. Some particular constitution of the air is generally supposed to occasion it; but what that is, never has been, and probably never will be ascertained. The extremes both of heat and cold are said to be unfavourable to the propagation of plague, but this opinion must be taken with some limitations. The plague raged in summer at Malta, in the winter months at Corfu. Nor is it clear, that it is upon any peculiar state of dryness or moisture in the atmosphere that the phenomenon depends; though indeed there is a popular belief all over the Levant, that the heavy dews which begin to fall about St. John's day check the advance of the plague. To this circumstance is attributed the curious but well-ascertained fact, that though the disease had been previously raging in the town, the inhabitants may after that day leave their homes and mix in society with comparative security.

It is a common remark in the Levant, that the advances of the plague are always from south to north. When the plague is at Smyrna, the inhabitants of Aleppo handle goods without precaution, and have no fears of contagion. When the disease, on the other hand, is at Damascus, great precautions are observed, and all the Frank families hold themselves in readiness to *shut up*, or to leave the town. An epidemic plague, therefore, nearly always begins at Grand Cairo, spreads to Alexandria, and from thence through Syria to Smyrna and Constantinople.

The seeds of the plague being always present in Turkey, if it were not for these peculiarities in the laws of its contagion, that country must have long since depopulated. Whether the genuine Levant plague could spread in this climate, is a point upon which physicians are not agreed. The general opinion is, that it might so spread under particular circumstances; and therefore, that the quarantine regulations established by the legislature are absolutely necessary for the protection of these countries.

CHAP. VI.

INTERMITTENT AND REMITTENT FEVERS.

Train of Symptoms in the Paroxysm of an Intermittent. Primary Types of Ague. Prognosis. Diagnosis. Character and Symptoms of Remittent Fevers. Causes of Endemic Fever, predisposing and occasional. Of Marsh Miasmata and Malaria. Treatment of Intermittent Fevers; during the Paroxysm; during the Interval. Bark. Arsenic. Treatment of Complex Agues. Of Remittent Fevers.

INTERMITTENTS are readily distinguished from every other form of idiopathic fever by their occurrence in paroxysms, each of which may be considered as an epitome of a febrile disease, exhibiting in the course of about eight hours all the stages of fever—its rise, progress, crisis, and termination in the recovery of health. This circumstance has contributed to give to intermittent fever a large share of the attention of pathologists. By an accurate investigation of its phenomena, they have endeavoured to arrive at a knowledge of the nature of febrile action, and have imagined they could apply to the more varied appearances of other diseases, those general views which the consideration of agues suggested. Distrusting in some measure this principle, I commenced the inquiry by a sketch of the more frequent, and, in this country at least, far more important subject of continued fever.

Symptoms of intermitting fever.—The symptoms which occur in the paroxysm of an intermittent fever divide themselves in the first place into the two great classes of *regular* and *superadded*. The former admit of an obvious subdivision into three stages,—the *cold*, the *hot*, and the *sweating*, in the course of which the different functions of the body undergo very remarkable changes.

PHENOMENA OF SIMPLE AGUE.

Cold stage.—The paroxysm commences with a sense of languor, listlessness, and fatigue. Coldness is then felt, first in the back, and afterwards over the whole frame, accompanied with muscular pains. The features appear pale and shrunk; the skin is dry and rough; shiverings increase, the teeth chatter, and the temperature of the skin is reduced. Sensation is depraved; a disagreeable clammy taste is perceived in the mouth, accompanied with nausea, bilious vomiting, and a loathing of food. A sense of weight and oppression at the præcordia is felt, respiration is hurried, with frequent sighing, stretching, and yawning. The pulse is frequent, small, and contracted. The tongue is white; the urine limpid, scanty, and often made. The bowels are confined. The mental faculties are overpowered and stupified.[*] The leading features of the cold stage of ague are oppression of the brain and nervous system, with accumulation of blood about the right side of the heart and the great venous reservoirs of the epigastrium. The cold stage varies in duration from half an hour to three hours.

Hot stage.—Transient flashes of heat alternate at first with rigors, until at length the whole surface becomes intensely hot. The skin is now turgid, and the face flushed. Extreme restlessness succeeds, and the patient tosses about the bed. The symptom of most urgency is a painful sense of fulness in the head, often very intense, and accompanied with giddiness, and throbbing of the temporal arteries. The breathing becomes easier. The pulse is frequent, full, free, and active, perhaps hard. The tongue is covered with a copious white or brownish fur. There is intense thirst. The bowels are torpid. The urine is still scanty, but now high coloured. There is confusion of thought, amounting in severe cases to delirium. This is the stage of reaction. The heart has succeeded in throwing back the blood upon the remotest capillaries. Nervous oppression has been succeeded by arterial excitement. The mean duration of the hot stage of ague is three hours.

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[*] In Sir Ashton Lever's museum there was preserved the foot of a boy burnt to a coal during the cold stage of an ague, showing the degree to which the stupor sometimes extends.

Sweating stage.—Partial sweats at first break out on the forehead and breast, until at length the whole body perspires profusely. The febrile symptoms now rapidly subside, the due equilibrium having been restored between the larger and the smaller vessels. The pulse sinks to its natural standard, and becomes soft. The tongue appears clean. Thirst goes off. Appetite returns. The bowels act. The urine flows copiously, and deposits an abundant *lateritious* or red sediment (lithate of ammonia). The mind acquires power and composure. A feeling of health and comfort returns. The patient falls asleep. The paroxysm of fever is at an end. Its average duration may be estimated at eight hours, the extremes being six and twelve hours.

Superadded symptoms.—To these, the regular or essential symptoms of ague, others are occasionally superadded. They may occur at any period, but are chiefly observed in the hot stage. Occasionally they are present in such intensity as completely to mask the primary disorder. Their character varies with the climate, the season, and the idiosyncracies, or peculiarities in habit of the individual affected. They are of all kinds, abdominal, thoracic, cephalic, and superficial. The principal of them are stupor and coma, pleuritic and rheumatic pains, cough, irritable stomach, diarrhœa, jaundice, cramp, palpitation, syncope, hæmorrhages. In some seasons, nervous symptoms predominate, requiring opium. At other times, inflammatory affections of the viscera prevail, with a buffy state of blood, requiring the free use of the lancet.

Primary types of ague.—After a certain interval, the train of symptoms now described is renewed; and the period of recurrence gives what is called the *type* of the fever. From very early times three primary types of intermittent have been observed—the QUOTIDIAN, the TERTIAN, and the QUARTAN, in which the febrile paroxysm completes its revolution in the respective periods of twenty-four, forty-eight, and seventy-two hours. Of these the most common is the tertian, and this therefore is always considered as the *primary* type of fever. When the febrile symptoms, instead of ceasing *entirely* in the interval between the paroxysms, abate only to a greater or less degree, the fourth, or REMITTENT type of fever is present. It generally exhibits *quotidian* exacerbations. Aggravated and masked as this fever often is by visceral congestions, it is difficult to trace its connection with the common intermittent of this country. Nevertheless their mutual relations are undeniable. Several irregular types of intermittent fever have been taken notice of by authors, such as the double tertian, the semitertian, and the double quartan, but they are not of frequent occurrence. The double quartan may be taken as a specimen. In this variety of ague paroxysms occur on two successive days, followed by one of intermission; the paroxysms of the first and fourth day corresponding in the character and the severity of the symptoms, as well as in the hour of attack; and so of the second and fifth, though varying in each of those points from the two others.

Conversion of types.—In the course of the disease it is frequently observed that the type changes; tertians and quartans into quotidians, quotidians into remittents. Under more favourable circumstances, the remittent shows the character of an intermittent; and, generally speaking, the change into a type of less frequent repetition indicates an abatement in the severity of the disease. Physicians have remarked, that the tertian type of fever has its invasion at noon, the quartan in the afternoon, and the quotidian in the morning. The quartan, which has the longest interval, has the longest and most violent cold stage, but, upon the whole, the shortest paroxysm. The hot fit of the tertian is comparatively the longest. The quotidian, with the shortest interval, has, at the same time, the longest paroxysm. These observations are worthy of note, but it must be borne in mind that they admit of numerous exceptions.

Upon what particular circumstances the type of intermittent fever depends has never been ascertained; but that climate and season have great influence over it, and also over the general character of the symptoms, cannot be disputed. Vernal agues generally assume the tertian type, and are marked by an inflammatory diathesis. They are, however, mild, and usually run their course quickly. Quartan agues prevail chiefly during the autumn and winter months. They are often complicated with gastric or bilious derangement, and are the most obstinate of all the forms of intermittent fever. Great as is the influence of season, it is yet inferior to that of climate. The remittent type is that which prevails most widely in hot countries; and nothing which we see here gives an adequate idea of the extreme violence which, under certain circumstances of soil, situation, and high atmospheric temperature, remittent fevers are found to exhibit.

Sequelæ of intermittent fever.—An ague sometimes continues, particularly in cold climates, to affect the body for a very long period, without producing any permanent derangement either of function or structure. Repeated attacks, however, ultimately give occasion to visceral obstructions; and the peculiar tendency of ague to produce enlargement of the spleen has long been observed. When examined, after death, this organ is found to be soft, and its cellular structure distended. By the vulgar, the enlarged spleen is called the *ague cake.* It has been known to weigh ten or eleven pounds, the natural weight of the organ being about eight ounces. The cause of this peculiarity in the effects of ague is as yet undetected. The liver is also sometimes implicated. From these organic derangements results, as another consequence of ague, *dropsy.*

Prognosis in ague.—No general prognosis in intermittent fever can be given which is not qualified by reference to the locality in which the disease appears. In this country, ague is not a disease of danger; but in Walcheren, and some other parts of Europe, still more in various situations between the tropics, the malignity of the endemic fever is quite appalling. Season also, as I have already stated, affects the general prognosis. It is influenced in like manner by the previous duration of the disease. An ague which has been present a considerable time, has so far rivetted itself in the constitution, that its removal becomes tedious and difficult. Relapses under such circumstances are frequent, and tend materially to injure the constitution. An ague is more or less dangerous, in proportion as it is complicated with more or less of permanent derangement of the function or structure of an organ. Enlargements of the spleen from ague are sometimes removed, but they require the utmost vigilance on the part of the practitioner. The progress of intermitting fevers is subject to great variation. Some run their course rapidly, some extend to months or even years. The former are called acute, the latter chronic agues. When ague proves fatal, it is in one or other of the following modes:—1. After a few revolutions, occupying a fortnight or three weeks, by affection of the head or *coma*. 2. After a variable period, extending, (as I have myself witnessed in a Walcheren ague,) to three years, by disorganization of the abdominal viscera, and dropsy. In some cases the immediate cause of death is rupture of the spleen, and consequent hæmorrhage into the general cavity of the abdomen.

Diagnosis.—The only disease for which intermittent fever is liable to be mistaken is Hectic fever. The similarity in their phenomena is very striking, and the means of diagnosis are as follow:—1. In hectic fever the exacerbation takes place for the most part in the evening. The quotidian ague commences generally in the morning. 2. In hectic fever the sweating stage is very long, and often protracted through the whole night. This is hardly ever witnessed in a genuine ague. 3. In hectic the countenance is flushed: in an ague the aspect is muddy. 4. During the intervals of hectic the pulse is always more or less accelerated. After a paroxysm of real ague the pulse falls to its natural standard.

PHENOMENA OF REMITTENT FEVER.

The symptoms of remittent fever bear a general resemblance to those of ague. The cold, the hot, and the sweating stages succeed each other in the manner described; but in the remittent fever there is no return of healthy feeling. There is simply an abatement or diminution of the symptoms when the sweating ceases. The period of remission varies from six to twelve or fourteen hours, when the feverish excitement returns, occasionally, though not invariably, preceded by chilliness and rigor. Such a fever may be considered as holding a middle rank between intermittent and continued fevers. In temperate climates, remittent and intermittent fevers may be seen prevailing together. In some seasons the remittent, in others the intermittent type predominates. Throughout most tropical countries the principal type of fever is the remittent, and in some unhealthy localities the true ague, with its period of perfect *apyrexia*, is never witnessed at all.

The remittent fever of hot climates is characterised, first, by a general intensity of all the symptoms; and second, by the more uniform occurrence of particular complications. Every endemic has its own peculiar and distinguishing features. The fever of Sierra Leone differs from that of Trinidad; the fever of the West Indies from that of the East. In some situations the febrile impetus falls chiefly on the abdominal viscera, and *gastric* symptoms are the most prominent, such as pain of the epigastrium and side, nausea, vomiting, hiccup, diarrhœa, fulness in the region of the liver, jaundice, hæmorrhage from the bowels. High vascular excitement, with congestion or inflammation of the liver, spleen, or intestinal tube, constitutes that formidable disease called the *bilious remittent of hot climates*. Such a form of fever is sometimes witnessed in this country during the hot season. In August, 1826, a case came under my care, originating on the Essex coast, characterised by a strong and full pulse, determination of blood to the head and liver, jaundice, and buffy blood. The symptoms remitted on the alternate days, and exacerbated without rigor.

In other localities, cerebral symptoms occupy the foremost place. There is excruciating pain of the head, great vascularity of the conjunctiva, a flushed or purple hue in the countenance, incessant restlessness and jactitation, stupor, or delirium. A peculiar *form* of delirium has been observed in the severe remitting fevers,—a gloomy but causeless apprehension impelling its victim to suicide. Sometimes the mind is impressed with an indelible feeling of impending danger.

The remitting fever of Sierra Leone, by which so many lives have recently been lost, exhibits a third or metastatic variety. It is ushered in by violent pain in the region of the liver, increased on pressure, and a sense of fulness with pulsation in the præcordia. These symptoms are succeeded by evidences of strong determination of blood to the head, and the patient dies comatose. If he survives, enlargement of the spleen very generally takes place, accompanied by paroxysms of *intermitting* fever.

Morbid anatomy.—Dissection of those who die of remittent fever in these its most aggravated forms, displays one or more of the great viscera congested with blood, or suffering under some of the consequences of active inflammation.

Prognosis.—Convalescence from remitting fever is usually very tedious, and interrupted by numerous relapses. A favourable inference may be drawn from the remissions becoming more distinct, the conjunctivæ less vascular, the bowels more obedient to the action of purgatives, and the flow of urine more abundant. In these fevers death usually occurs between the third and the seventh days. The mean duration of the tropical remittent, in cases of recovery, is about fourteen days.*

PATHOLOGY OF ENDEMIAL FEVER.

Predisposition.—The circumstances which predispose the body to an attack of intermittent or remittent fever have been detailed by authors with great minuteness, but there are only a few which are of any practical importance. Certain states of the air favour the disposition of the body to receive ague, rivet it in the constitution, baffle us in our attempts to cure the disease, and induce a tendency to relapse from the application of slight causes. Of these the most remarkable are the concurrence of a cold with a moist state of atmosphere, the prevalence of an easterly wind, and the night air. The last of these is, in a practical point of view, of the highest importance. Dr. Lind, whose opportunities of observation were very extensive, lays much stress upon it. He strongly urges the danger of sleeping, or remaining all night, in unhealthy situations; and in his Essay on the Diseases of Hot Climates, illustrates this important principle by many apposite examples.

Weakness of the body, whether owing to a poor and unwholesome diet, long watching, fatigue, severe evacuations, or previous diseases, augments the disposition to these fevers. Hence it is that they prevail with so much greater frequency and virulence in camps than in any other situation; particularly after a severe campaign, when the men have been hard worked, and exposed to great privations. The mind has also its full share of influence. Anxiety and inactivity increase, while hope and confidence, and whatever can excite mental energy, lessen the susceptibility. An army is generally most free from fever while actively engaged in military pursuits.

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* In the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge" (vol. i. p. 53) the reader will find a most interesting account of the remitting fever of the Persian Gulph, including a graphic sketch of the *sow dah*, or that singular sensation of dread and horror, with tendency to self-destruction, described in the text. Prefixed to this paper are some remarks on remittent fever by Mr. John Hunter.

In an enumeration of the predisposing causes of endemic fever, *habit* merits especial mention, or that tendency which previous attacks give to a recurrence of the complaint. In this circumstance, intermittent fevers differ from continued, where one attack lessens the liability to a second. So powerful is the effect of habit in ague, that very slight causes are sufficient to renew the paroxysm, when the disease has been once experienced. It even serves to give an intermitting character to any other disease which may accidentally arise, such as headache, toothache, asthma; or even to such severe diseases as palsy and enteritis.

MARSH MIASMATA.

The great and important *occasional* cause both of intermittent and remittent fevers are exhalations from the soil. Differing as these classes of fever do in many of their phenomena, they yet agree in their mode of origin, and are, therefore, associated under the title *endemic* or *endemial* fevers. As febrific exhalations are thrown off most abundantly by marshy, swampy, and low grounds, they were early called by physicians marsh miasmata. It should be well understood, however, that the existence of a *marsh* is by no means essential to the production of such fevers; and therefore the term *malaria*, which simply implies the tainting or vitiation of the air by noxious exhalations from the earth is preferable, as involving less theory, and being of more general application. It is certainly a curious fact, that this pathological principle, so obvious, and so important in its practical tendency, should have been unknown to, or at least unnoticed by, the older medical authors. Lancisi is the original writer on marsh effluvia.* Since his time the subject has been occasionally, but not very fully, discussed, and we are still, it must be owned, much in the dark respecting the circumstances upon which the production of febrific miasms depends. It is presumed, however, that their elements are earth, water, and decaying vegetable matter, and that they are the result of the drying process in particular soils. Moisture alone, though ever so abundant, will not produce ague, for it is a disease unknown at sea, even upon the foggy banks of Newfoundland. When the marsh is covered by water, agues are less frequent. Of the exact nature of these febrific miasmata we are ignorant; but some points have been noticed with regard to them, which it will be proper to advert to.

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* His Treatise is entitled "De Noxiis Paludum Effluviis; Rome, 1717."

The most elevated parts of a marsh being always the healthiest, it is imagined that the miasmata are comparatively heavier than atmospheric air. There is reason too to believe, that they cannot be wafted by currents of air to any great distance from the spot where they were generated; but on this point some differences of opinion have lately prevailed. The calm months of the year being the most productive of agues, it is reasonable to suppose that the miasmata are most powerful when concentrated, and that diffusion by a brisk wind renders them comparatively inert. Culture and proper draining prevent their formation, and hence it is that intermittent fevers are so much less frequent in England at present than they were formerly. A very short exposure to the exhalations of an unhealthy country is sufficient to affect the system. Travelling through the Pontine Marshes has often been followed by an attack of ague.

Period of incubation.—The interval which elapses between exposure to malaria and the invasion of disease is liable to some variety. From observations made on the endemic fever of Sicily in 1810,* it appears that the average period of incubation of the paludal febrific miasm is twenty days; the minimum being thirteen, and the maximum thirty. When the miasm is very energetic, few constitutions can resist its deleterious influence. In the instance just quoted, of ninety-one persons exposed for a fortnight to the action of the morbific germ, fourteen only escaped an attack of the disease. The intensity of the effluvium is proved by the fact, that of the total number attacked (seventy-seven), twenty-three died, being in the ratio of thirty per cent.

That the exhalations from *marshy* grounds are peculiarly liable to produce fever is abundantly obvious; but it prevails also extensively in districts where there are no marshes. It will always be found, however, that there is then something

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* London Medical Gazette, vol. ix p 745.

[illegible] soil of such a nature as does [illegible] through it; or an extent of [illegible] and the action of the sun's [illegible] heat; or a total inattention to [illegible] or other of these ways, we may [illegible] of endemial fever in the unculti- [illegible] the shores of the Black Sea, and in [illegible] Sicily. At Sierra Leone there is [illegible] palpable exhalations defy scepticism, [illegible] supplied by the excessive and almost un- [illegible] the atmosphere, the rank luxuriance of [illegible] the extreme heat, which, causing a continual [illegible] the soil and rivers, serves also to enervate the [illegible] and predispose it to the noxious influences of a [illegible] Persons residing in the very centre of [illegible] occasionally attacked by intermittent fever. In [illegible]denham agues were common in every part of the [illegible] To the great attention which is now paid to the [illegible] probably, in a considerable degree, indebted for [illegible] healthiness of the town, and particularly for our [illegible] from ague.

[illegible] *conditions of the soil* are not merely the occasion of [illegible] and remitting fevers, but in some instances also of [illegible] a purely continued type. This principle in pathology [illegible] to when treating of continued fever, and it was then [illegible] to constitute an exception to a great law of the animal economy. There are grounds for believing that in all such [illegible] the fever owes its continued form to some peculiar intensity in the deleterious effluvium, which first converts the intermittent into the remittent, and then aggravates the remittent into the continued form. Some authors have invested terrestrial miasms with still further powers, and would persuade us. that neuralgic affections of all kinds, besides various other forms of chronic disease, are traceable to this source; but the notion is fanciful, and has never been generally acknowledged by pathologists. The conclusions then to which we arrive are, 1st. That febrific miasmata may arise, under particular circumstances, from almost any soil that retains surface water; and 2nd. That the disease which they produce has in all cases a tendency to exhibit the phenomena of *intermission*, or at least of well marked *remission*.

TREATMENT OF ENDEMIC FEVER.

It has been made a question whether agues ought to be cured. An idea has prevailed in many aguish countries, that there was something salutary in the endemic fever. Boerhaave himself, a physician of great genius, was misled by this prejudice; and not satisfied with the negative merit that agues do no harm, and may therefore be suffered to continue, speaks of their positive advantages.[*] Another erroneous notion respecting the treatment of agues has frequently been avowed; namely, that their management requires little or no exercise of professional skill. So far is this from being the case, that agues often baffle the best directed exertions of our art. They become complicated with other diseases; their symptoms are modified by climate, season, and habit of body; nor can their treatment be properly adapted to these different circumstances, except under the guidance of pathology.

We shall begin by considering the treatment proper to be pursued in cases of *simple ague*. We shall then proceed to detail the management of the *complex ague* of temperate climates. A few observations will follow on the treatment of the aggravated forms of the *tropical remittent*.

Cure of simple ague.—In considering the method of cure in intermittent fevers, their tendency to spontaneous termination must be borne in mind. Hippocrates, in the very dawn of medical science, took notice that tertians, particularly in the month of July, often terminated, without the aid of medicine, within five, seven, or at most nine revolutions; and modern experience has confirmed the observation.[†] Mild vernal tertians will frequently go off spontaneously; but though this tendency is to be kept in view, that the practitioner may feel he is working with nature, and not against her, it is by no means to check his efforts to put a speedy period to the disease.

Indications of cure.—The treatment of ague divides itself into two parts, the palliative and the curative; in other words, the treatment *during* the paroxysms, and in the intervals *between* them. During the paroxysm, the object of the practitioner is twofold—to hasten its different stages, and to relieve urgent symp-

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[*] Cæterum, nisi malignæ, corpus ad longævitatem disponunt, et depurant ab inveteratis malis.—BOERHAAVE, *Aphor.* 754.

[†] Vide Cleghorn on "the Epidemical Diseases of Minorca," page 205.

equivalent to indications of cure to be
not allow the easiest of attainment,
wood imped of the ague; the second,
rays; or ex to fortify the constitution
drainage must always be pursued toge-
readily often fulfil both.
vated sense would dictate the employ-
many addition to external warmth; and
indeed almost universally to succeed.
but it pediluvium, are therefore to be
vary draught given, currently known by
the sught:—

sulph. ʒi.
pii. ♏xxx.
amphoræ, ʒx.
croci, ʒi. Misce.
incipiente frigore febrili sumendus.

of ammonia in the dose of eight grains
the same intention. Various remedies of a
principally of combinations of spirit and
acquired great reputation with the vulgar.
producing some strong impression either on the
ternal senses. The practice of drawing blood in
stage of ague has been revived within the last few
supposed to be indicated by the venous congestion
In some obstinate chronic agues this measure
adopted with advantage, but its indiscriminate or
use is much to be condemned.

During the hot fit, cold acidulated drink and saline diaphoretics are advisable. Two practices, however, of a peculiar have been recommended in this stage of the disease, which require essential notice. The first is the employment of blood letting, and the second that of opium. With respect to blood letting, much controversy has taken place as to its propriety, even from the time of Celsus. We have the assurance of Pringle and Cleghorn,* that in warm climates and hot seasons it is a safe and proper practice, rendering the intermission or remission more complete, taking off that inflammatory diathesis which counteracts the beneficial effects of bark, and removing those pleuritic and rheumatic affections, and those symptoms of congestion in the liver and brain, which are often complicated with fevers of endemic origin. The blood drawn in the hot fit of an ague frequently exhibits the buffy coat.

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* Pringle on the Diseases of the Army, page 200. Cleghorn on the Diseases of Minorca, page 197.

Dr. Lind speaks in the most favourable terms of the exhibition of *opium* in the hot stage of ague. He recommends the opiate to be administered about half an hour after its commencement, and he states, that it shortens and abates the fit, relieves the headache (which is always an urgent symptom in this period of the disease), and brings on a profuse sweat with an agreeable softness of the skin, ending in a refreshing sleep. Dr. Lind is entitled to great confidence, for he was an accurate observer, and his opportunities of seeing the disease under all its modifications were very extensive.

In the interval, as I have already remarked, the *indications of cure* are, to counteract the recurrence of the paroxysm, and to fortify the constitution against relapse. It is commonly stated, that the object is to give *tone* or strength to the system, but the acknowledged efficacy of arsenic in the cure of agues does not countenance such an opinion. As we are altogether unacquainted with the manner in which malaria and marsh miasms produce ague, so, in like manner, must we profess our ignorance of the precise mode in which our *febrifuge* medicines operate. They appear to concur in producing some strong impression on the nervous system, which prevents the development of fever. This idea is corroborated by the consideration, that the nearer they can be given to the expected period of the paroxysm, the more certain is their effect. They are of two kinds: 1. Medicines having an obvious effect upon the body—emetics, purgatives, stimulants. 2. Medicines whose agency is obscure, or wholly unknown—quinine, arsenic, the sulphate of zinc.

A brisk emetic, composed of a grain of tartrate of antimony or a scruple of ipecacuan, is often serviceable in checking the approach of the fit. It should be administered about an hour prior to the expected paroxysm. This practice is well adapted to acute agues—that is, to recent attacks assuming the mild or tertian type, occurring to persons previously in good health, where the intermission, though free from febrile excitement, is accompanied with a foul tongue, headache, and impaired appetite. When the fit is over, the following purgative draught should be given:—

toms. In the interval there are also two indications
kept steadily in view. The first, and the easiest of
is to put a check to the regular return of the ague
to improve the general health, and to fortify th
against relapses. These objects must always be
ther, and the same measures will often fulfil bo

In the cold stage, common sense would di
ment of internal stimulants in addition to ext
in fact such treatment is found almost uni
Hot bricks, blankets, and the pediluvium,
applied, and the following draught given
the name of the ague-draught:—

℞ Spt. ætheris sulph. ʒi.
Tinct. opii, ♏xxx.
Mist. camphoræ, ʒx.
Syrupi croci, ʒi. Misce
Fiat haustus, incipiente fri

The subcarbonate of ammonia
may be used with the same inten
like kind, consisting principally
aromatics, have acquired great is.
They agree in producing some united
stomach or external senses. pium; or
the cold stage of ague has ated for the
years, and is supposed to be t efficient and
then present. In some o quinine, which in
may be adopted with a ntly repeated, may be
frequent use is much to ona in the cure of ague

During the hot fit, co on with a diffusible stimu-
retics are advisable. ammonia, port wine, brandy,
nature have been rec ut there are certain states of
which require essenti nd to interfere with the exhi-
blood-letting, and t and to counteract any good effects
blood-letting, much se are, an inflammatory diathesis
priety, even from disorders of the primæ viæ, obstruc-
of Pringle and Cl and mesenteric glands, the direct con-
it is a safe and the presence of other diseases not
remission more disposition, such as bronchial inflam-
which counter the necessity of blood-letting, of purga-
medicines, and of alteratives,
either previous to, or combined with,
nces of the case.

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* Pringle on the
of Minorca, pa

neither the amount nor frequency
ce, provided enough be given
of powdered bark mixed
of the sulphate of qui-
llowing draught may

nendus.

grain of quinine
tnight.* In more
te of quinine may be
subsided; after which
n quotidians and double
the character of continued
mple saline draughts every
taken at bedtime for two or

iatis,
alis, sing. gr. ij.
lisce.

f quinine may be increased to three
ill given an hour before the expected
s it is desirable to keep up the influence
eks after the ague has apparently ceased.
es for the cinchona bark, native and foreign,
uced into the Materia Medica, belonging to
ters and astringents. Among the best may be
barks of cusparia, of different species of salix
and the roots of the acorus calamus, bistort, and
They are all very inferior however in point of efficacy
rtex cinchonæ, arising doubtless from their want of
culiar vegetable alkali (quinine and cinchonine), which
efficient ingredient in the latter drug.

rsenic.—Of the mineral substances employed in the cure
agues, the most powerful by far is arsenic, the efficacy of
which was first ascertained by Dr. Fowler, of Stafford, in 1783.
Out of 247 persons on whom he tried it, 171 were permanently

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* Other formulæ for the administration of bark may be found in the Appendix. (*Tonica amara.*)

cured. Its claims to the character of a febrifuge have since his time been ascertained by the most ample experience. It is best given in the form of the liquor arsenicalis, and in a dose of five drops, gradually augmented. In some cases it is found advantageous to combine arsenic with bark, as in the following formula:—

℞ Decocti cinchonæ, ℥x.
Liquoris arsenicalis, ♏viij.
Syrupi zingiberis, ℥i. Misce.
Fiat haustus, ter in die sumendus.

After a certain length of time, sometimes indeed from the very first, arsenic will produce nausea and vomiting, when its exhibition must be suspended, and a few grains of rhubarb given. Under proper management, arsenic will be found, next to bark, the most generally useful of all medicines in the treatment of agues; but its administration requires to be regulated in the same manner, and watched with even more caution than that of bark.

Sulphate of zinc.—This medicine is largely employed in the fenny counties of England as a cheap but efficient substitute for the sulphate of quinine. The following is the form in which it is usually administered:—

℞ Zinci sulphatis,
Pulveris aromatici, *sing.* gr. xij.
Opii, gr. j.
Syrupi, *q. s.* Misce.
Divide in pilulas sex.

One of these pills to be given three times a day. Indian practitioners employ it with advantage in doses of four grains, repeated every four or six hours, in combination with the powder of capsicum.

Treatment of complex ague.—It rarely happens that ague is long protracted without serious functional or some degree of structural disorder occurring in one or more important organs—the liver, spleen, stomach and bowels, or lungs. The physician will be careful to ascertain the nature and extent of such complication, and to combine with his febrifuges the remedies appropriate to the local disorder. It would be impossible to lay down rules to guide the student in every case. The following hints, however, may assist him in the management of those which are most familiar:—1. In chronic ague, accompanied with costive bowels, pain in the region of the liver, clay-coloured motions and high-coloured urine, the following pills should be given, and, if requisite, repeated:—

℞ Hydrarg. submur. gr. iv.
Extracti coloc. comp. gr. vj.
Forma in pilulas duas.

2. Where pain and fulness in the region of the spleen indicate that organ to be affected, leeches and fomentations should be applied, a pill of four grains of calomel given at night, and a senna draught the following morning. These medicines should be repeated at intervals of three or four days. 3. In hepatic complications, quinine may be given in combination with small doses of the pilula hydrargyri, until gentle ptyalism has been procured. 4. When sickness and vomiting accompany the frequent discharge of bilious stools, half a grain of calomel with one-fourth of a grain of opium should be administered, and repeated at short intervals. 5. When the bowels are relaxed, and the motions pale and frothy like yeast, the following powder is useful:—

℞ Hydr. cum creta,
Pulv. ipec. compos. *sing.* gr. vj. Misce.
Fiat pulvis bis in die sumendus.

After a few days, three grains of calomel may be given with ten or twelve of rhubarb. When the stools are slimy, anodyne enemata must be superadded. 6. Bronchial complication must be alleviated by leeches to the chest, demulcents containing hyoscyamus, or the paregoric elixir, with a full dose of opium and antimony at the approach of the paroxysm. In these cases quinine may often be given, although the powder of bark would prove heating and inadmissible.

TREATMENT OF REMITTENT FEVERS.

Remittent fevers, whether occurring in temperate or in tropical countries, demand a treatment regulated partly by those principles which have been laid down with regard to intermittents, but chiefly by those which guide us in continued fever. The general rule in all cases is to abstain from the employment of bark, arsenic, and the specific febrifuges, until a distinct intermission has been obtained. Many remittents will terminate, some favourably, some fatally, before that event has taken place; consequently, in a large proportion of such cases, the object of the physician is simply to diminish arterial excitement, to alleviate such urgent symptoms as depend on mere functional derangement, and to combat with all his energy those local inflammations and congestions which so strongly characterize this class of fevers.

The simple remittents of temperate climates require the exhibition of saline medicines, of calomel and antimony given at night, and of occasional purgatives. Blood-letting is sometimes requisite during the hot stage to allay inordinate arterial action. Moderate doses of sulphate of quinine sometimes serve to shorten the convalescence. Free evacuations by blood-letting, leeches, and cupping, with active aperients containing calomel, cold lotions to the head, blisters to the nape of the neck, and opium (as well to restrain vomiting as to procure sleep) are the remedies on which the chief reliance must be placed in those aggravated forms of remittent fever which occur in hot countries. In a few cases it is useful to affect the system with mercury. To determine the extent to which these several remedies should be pushed constitutes the great and acknowledged difficulty in the management of remittent fevers. This knowledge with many must be the result of extensive and often dear-bought experience. As every endemic has its own characteristic features, so does each require some peculiarity of management.

One measure at least is applicable to them all, from the mildest to the most severe,—change of air. In every case let the patient, as soon as possible, quit the district where the disease was contracted. This, which will alone suffice to effect a cure in many cases, will in all materially aid whatever plan of treatment may be adopted. "Pessimum ægro," says Celsus, "est cœlum quod ægrum fecit;" and to no complaint does this maxim apply with more force than to remittent fever.

CHAP. VII.

OF THE YELLOW FEVER.

Controversy on this subject. Varieties of Fever in the West Indies. Symptoms of the epidemic Yellow Fever. Its analogy to Typhus. Treatment of the disease. Notice of the principal controverted points in the History of the Yellow Fever. Question of foreign Origin. Of propagation by Contagion. Of exemption from a second Attack.

Although we presume, that the observations already made have explained the most important principles involved in the pathology of fever, and though the discussion might therefore be expected to terminate here, still it may be found advisable to pay some special attention to the subject of *yellow fever.* It is one which has excited a great deal of interest in this and other countries, during the last thirty years. It has given rise to the most singular differences of opinion among persons, to all appearance, equally qualified to form a correct judgment regarding it; nor has the controversy yet entirely subsided. It therefore cannot be an useless task to attempt to elucidate a subject, confessedly so obscure, by applying doctrines already laid down, to an explanation of the principal points of dispute.

The disease of which I propose here to treat under the title of the *yellow fever* is that which, under the name of Maladie de Siam, or Bulam fever, has been frequently observed to prevail in the West Indies, along the shores of North America, particularly at New York and Philadelphia, and more lately in the southern parts of Spain. It has spread *epidemically* in those regions, and been productive of very great mortality in particular seasons.

It is scarcely necessary to apprise the student, that hot countries are subject, no less than cold, to the occasional visitations of epidemic disease. They have also, of course, their peculiar endemics, and the term yellow fever is currently applied, in the West Indies, to express modifications of fever different from that which I am now about to describe. Most of the genuine febrile diseases of hot climates appear to have a *bilious* tendency. The inflammatory, as well as the intermittent and remittent endemics of those countries, are frequently accompanied with a yellow colour of the skin, and other symptoms supposed to denote that the functions of the liver are materially disturbed. The symptoms and treatment of these forms of endemic disease, however, it is not my intention to discuss. The present object of inquiry is the epidemic yellow fever, such as raged in the West India Islands and at Philadelphia in 1793; at Cadiz in 1800; at Malaga in 1803; at Gibraltar in 1804 and 1813; and at Ascension Island in 1823.* As this particular form of fever exhibited in all these situations very much of the same defined and in several respects peculiar character, I shall give a short account of its symptoms and progress, of the appearances found on dissection, and of the most approved system of treatment.

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* See Sir William Burnett's "Official Report of the Fever which appeared in his Majesty's ship Bann, and the Island of Ascension, in 1823." London, 1824.

Phenomena of yellow fever.—The attack of yellow fever is ushered in, in the usual way, by languor and rigors. There is sometimes a peculiar dejection of countenance observed, with a remarkable aversion to the least motion; at other times there is an appearance of inebriation. The face is flushed; but the most prominent of the early symptoms of the disease is headache, of a very peculiar kind. It is exceedingly severe, and referred to the forehead and bottom of the orbits. The eyes appear dull, glassy, suffused, and protruded. The tongue is at first furred and moist, and trembling, but by degrees it assumes a dry, black, or sometimes fiery red colour. The heat of skin is but little increased. The patient sometimes lies in an almost insensible state, but extreme restlessness has also been noticed.

To this succeeds the second striking feature in the symptoms of the disease, great irritability of the stomach. The matter rejected is very seldom bilious, or if it is so at first, it speedily loses that character. For the most part it is slimy and tasteless, and adheres in small flakes to the sides of the containing vessel. As the disease advances, it assumes a dark colour, and at length has the appearance of coffee-grounds. This is the *black vomit*, which may be considered the characteristic feature of this disease, as much as buboes and carbuncles are of the plague. The dejections have a tarry appearance. There is often noticed a total suppression of urine, which, like the black vomit, is a fatal symptom. Hiccup, hæmorrhages, and petechiæ, have been observed in some cases, even from an early period.

I have retained to the last the mention of that symptom which gives name to the disease—yellowness of the skin, but it is not of that importance which might have been anticipated. Many cases, indeed, run through their whole course without exhibiting it; but when it appears early, or when the skin assumes a leaden or livid cast, it is to be considered an unfavourable symptom. A few other peculiarities in the disease are all that remain to be noticed. The yellow fever is occasionally attended with an ulcerated state of the throat. A fatal termination has often happened in the most unexpected manner; a very singular remission of all the symptoms taking place about sixty hours from the first attack, and raising hopes which are soon to be disappointed. Death is sometimes preceded by a degree of low muttering delirium; at other times the patient sinks exhausted, but with the intellect quite unimpaired.

The usual duration of the yellow fever is from five to seven days. If the patient passes the sixth day without the occurrence of black vomit, or suppression of urine, his chance of recovery is much increased; but even then, symptoms like those of common typhus occasionally supervene, and prove fatal. Relapses in this fever are very rare.

Morbid anatomy.—Upon dissection very few appearances present themselves which can be considered as throwing light on the pathology of the disease. The body has been observed speedily to become livid. Yellowness of the skin has sometimes been first noticed to occur after death. A state of turgescence of the cerebral veins has been described, and occasionally there has been observed a peculiar redness of the inner coat of the stomach. The gall-bladder is generally found distended with dark and viscid bile. The liver sometimes assumes an ash colour, although its structure is not found to be altered.

Analogy of yellow fever to typhus.—Such are the most usual symptoms of the yellow fever. They will be seen to bear some resemblance to those of the plague, and the analogy between these diseases has been urged with much force by Sir J. M'Grigor. A more important analogy may be traced between the epidemic yellow fever and the genuine typhus fever of this country; and there can be no doubt that the former bears the same relation to the endemic fever of the West Indies, that typhus does to the common *synochus* of Europe. It is properly called, therefore, the *typhus icterodes.* It is the *malignant* fever of tropical climates, characterized, like the malignant fevers of temperate climates, by deep-seated affection of the brain, and extreme irritability of the stomach, but in a higher degree of *intensity.*

The cause of the yellow colour of the skin in this fever has been made a subject of inquiry. By some, this appearance has been attributed to disordered function of the liver; by others, to bile absorbed from the intestinal canal without hepatic derangement. Sir Gilbert Blane has thrown out the idea, that it may be owing rather to a depraved state of the red globules of the blood. In whatever way this question may be decided, it is perfectly clear, that the state of the *biliary* organs has very little to do with giving a character to this formidable disease, which is to be viewed as one of the most aggravated forms of typhoid fever. In respect of mortality, the yellow fever may even take precedence of the plague. At Gibraltar, in 1804, the disease raged among the inhabitants, uninfluenced by any distinction of age, sex, or condition. Of a population of 9,000 civilians, only 28 persons escaped an attack of the disease. The deaths amounted to somewhat more than one in three; a proportion, according to Sir Gilbert Blane, considerably above the devastation of the pestilence of the Levant.

Treatment of yellow fever.—The treatment of the epidemic yellow fever is a point which has attracted great attention from all classes of inquirers; but their observations tend only to show that it is a disease of so singularly malignant a nature, as in a large proportion of cases to bid defiance to all the efforts of art. This is particularly exemplified when the disease first makes its appearance in any town or district. The severe headache which characterizes the early stages of the disease, naturally suggests blood-letting as a probable means of relief; but experience has proved that, though occasionally, it is not generally beneficial. The blood, when drawn, separates very imperfectly; upon exposure to the air, it does not acquire its usual florid colour, and scarcely ever exhibits a buffy appearance. In determining, however, the propriety of having recourse to blood-letting in yellow fever, the *habit of body* is certainly to be studied. In a plethoric habit, where the pulse is firm, a single bleeding will probably be beneficial. Venesection is useful rather with reference to the individual attacked than to the nature of the disease.

The principal object to be kept in view in the treatment of yellow fever, is the allaying that excessive irritability of the stomach, which leads to the black vomit. Calomel, given at first in a full dose, so as to operate freely as a purgative, and repeated in smaller doses at intervals of three or four hours, so as to keep up the effect, was the most approved practice among the English practitioners at Gibraltar in 1813. To the calomel were occasionally united aloes and gamboge. In the exhibition of these medicines no time was to be lost; for it was only by their speedy and complete operation that the prevention or relief of the vomiting could be ensured. Pediluvia and tepid sponging were found beneficial. Under certain circumstances, the warm bath was administered with advantage. Cold applications to the forehead and hands occasionally served to relieve the urgent headache. When the powers of life appeared to fail, it is unnecessary to say that stimulants and cordials were had recourse to. Subacid drinks were given, and a strict antiphlogistic regimen pursued through the whole disease. The same rigid attention to diet and regimen were required during the period of convalescence.

Pathology of yellow fever.—I have stated, that among the points in dispute regarding the yellow fever, is the question of the identity of the epidemic yellow, or Bulam fever, with the endemic fevers of the West Indies. Upon this question an opinion has already been given. The other topics of controversy are, first, whether the disease be imported or generated by a combination of *common* or endemic causes;—secondly, whether, being once received into a town, it propagates itself by contagion; and thirdly, whether those who have passed through the disease are susceptible of it a second time. These are all important questions, the replies to which are not so obvious as to that of its pathological affinity, which has already been noticed; and they involve the most difficult parts of the controversy.

The first question admits of some doubt. Many circumstances connected with the early appearance of the epidemic yellow fever at Philadelphia in 1793, and in Gibraltar in 1804, strongly favour the idea of its having been in those situations an imported disease. Other facts, however, might be adduced, which militate against the doctrine; and the probability is that in the great majority of cases the epidemic yellow fever is generated by a combination of endemic causes. What these are it would be difficult, perhaps impossible, to specify. A degree of obscurity hangs over the origin of this and of all other epidemic diseases which seems to elude the most searching inquiry.*

With regard to the second question, or that of the contagious nature of the epidemic yellow fever, the general impression on the minds of pathologists of the present day is undoubtedly against its propagation by contagion. The arguments in favour of such a notion, however, seem at least equally strong as for the contagion of typhus, or of erysipelas. It is not contended that yellow fever, typhus, or erysipelas, have contagion for their sole or *specific* cause, or even that the emanations from the bodies of the sick are the most frequent sources of those diseases. All that is meant is, that in the case of each of these fevers, the *consortium ægrorum* is an occasional and accessory cause, and that the effluvia which arise from the bodies of men labouring under these forms of malignant fever are not innocuous, like those which emanate from the bodies of persons labouring under dropsy, rheumatism, or consumption. The latent period of the contagion appears to vary from two to eight days.

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* In morbis producendis, viget occultum quid, per humanas speculationes fere incomprehensibile.—*Baglivi.*

The propagation of yellow fever requires a peculiar range of atmospheric temperature, but on a higher scale than that of the plague. It has never been known, except in those countries and at those seasons when tropical heats, ranging from eighty degrees of Fahrenheit, upwards, prevail. It never fails to disappear as the winter approaches. It is certainly a singular circumstance in the history of the yellow fever, that it has never prevailed to any remarkable extent at a distance from the sea, and that its principal ravages have been on the shores of the Atlantic Ocean.

The last circumstance which it is of importance to notice in the history of the yellow fever is the question whether it can be taken a second time. The answer is very simple. Although a few well attested instances to the contrary have been recorded, still a most extensive experience has satisfactorily proved, that the immunity from second attacks is nearly complete, that it undergoes no decay, either by lapse of time, or change of climate, and that it forms one of the most striking characteristics of this remarkable disease.*

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* See "Letter to Sir J. M'Grigor on the Sanitary Management of the Gibraltar Fever;" by Sir David Barry. London, 1830. Page 14.

CLASS II.

THE EXANTHEMATA, OR ERUPTIVE FEVERS.

CHAP. I.

THE EXANTHEMATA IN GENERAL.

Objects of Inquiry in this Chapter. Character of this Order of Diseases. Their relation to simple Fevers. Defined character and course of Exanthematous Fever. Defined character of the eruption. Their occurrence but once in Life. Exceptions to this Law. Their Origin from specific Contagion. Relation of the Exanthemata to the other Morbid Poisons. Peculiarities of specific Contagions. Inoculation. Incubation. Incompatibility with one another, and with other Diseases. Criticism on Dr. Willan's arrangement of the Exanthemata. Their connection with disease of Mucous Membrane.

The class of exanthemata, or eruptive fevers, is that to which our attention is next to be directed; and as the diseases which it comprises present many points of analogy, and several peculiarities which distinguish them from other complaints, it may be advantageous to offer some general remarks upon the class, previous to examining its component parts in detail. My object on this occasion will be to point out the pathological relations of the exanthemata, and to give a general idea of the objects of investigation in the five following chapters. With this view, I shall direct my attention to the relation which they bear to simple fevers, to one another, to other diseases arising from morbid poisons, and to cutaneous complaints. These objects of inquiry involve the consideration of some of the most important laws which regulate the phenomena of disease, but they can only be very briefly touched upon in this place.

Idiopathic fevers were formerly stated to be of three kinds, continued fevers, intermittents, and the exanthemata. The latter may be viewed as continued fevers to which an eruption is superadded; and much of what has been said regarding the general doctrine of simple fever, particularly all that part which relates to the prognosis and principles of treatment, will be found equally applicable to the case of fever complicated with eruption. The consideration of the exanthemata naturally follows that of fevers strictly so called, for by such an arrangement we shall be able to exhibit, in a connected view, all the leading doctrines of febrile disease.

The genuine exanthemata are, SMALL-POX, CHICKEN-POX, COW-POX, MEASLES, and SCARLET FEVER. There are a few other diseases of lesser importance, which, as allied in some respects to these, may be arranged in this division of the work, under the title of the Minor Exanthemata; but our attention in this chapter will be exclusively directed to the former. The following is the common character of the exanthemata. 1st. They are marked by the presence of fever, which runs a defined course. 2nd. They are attended with an eruption, which, like the accompanying fever, goes through a regular series of changes. 3rd. They occur to every individual once, and only once, during life. 4th. They arise from *specific* contagion.

1. The first peculiarity of the exanthemata is the defined character and steady course which the accompanying *fever* exhibits, under almost every variety of external circumstance. Here we trace a very marked and obvious distinction between exanthematous and the other forms of idiopathic fever. It is a feature, however, in the character of the exanthemata, which, though applicable as a general principle, requires to be received with some qualification. It is strikingly illustrated, indeed, in the fever of small-pox and measles, but it is less distinct in the scarlet fever; and in the cow-pox and chicken-pox, very little fever is discernible at any time. The *character* of exanthematous fever, except in the case of one form of scarlatina, is essentially inflammatory, and this it assumes with surprising uniformity in the young and the old, and in every variety of climate and situation. Some allowance must always be made for the influence of season and habit of body; but in these fevers alone do the descriptions of authors apply equally to all parts of the world. The regularity in the *course* of exanthematous fever is well shown in the three days of the eruptive fever of variola, and the eight days of its fever of maturation. These curious facts form a striking illustration of the doctrine

of critical days in fever, and of that principle of periodic movement in the animal œconomy, regulating many phenomena, both in a state of health and disease, to which we formerly referred. It is a singular circumstance, that this corroboration of the doctrine of critical days should not have been known till above a thousand years after that principle in pathology had been inculcated.

2. The second character of the exanthemata is drawn from their being attended with an *eruption* which goes through a regular series of changes. This is another of those remarkable facts in the animal œconomy, for which we may find some analogies, but which we shall never succeed in explaining. The appearance of the eruption in each of the diseases of this class is peculiar, and, except in some severe cases of chicken-pox, hardly admits of any doubt. The *progress* of the eruption in each disease is also peculiar, but it is uniform. That of scarlet fever shows itself on the second day, and declines on the fifth. The eruption of measles shows itself on the fourth day, and fades on the seventh. The eruption of small-pox shows itself on the third day, and maturates on the tenth. To this regularity of progress in the febrile eruptions there are, as might be expected, some exceptions. The casual small-pox sometimes maturates as early as the fifth day. In the inoculated small-pox the eruption is sometimes postponed from the ninth to the twelfth day; in the measles from the fourth to the sixth, or even later. The most remarkable exception is that enjoyed by the cow-pox, which has the characters of an *exanthema* without the occurrence of any eruption; but the regular progress of the vesicle and areola are sufficient to entitle it to its present place in the nosology. Even this sometimes varies; for, without any obvious cause, the vaccine pimple occasionally remains dormant for four or five days, and is not elevated before the sixth or seventh day. These cases, however, are rare, and they only serve to teach us caution in framing our general positions. An inquiry into the course of each particular eruption will form a prominent feature in our account of the respective disease.

3. The occurrence of the exanthemata to every individual once, and once only, in the course of life, is the most curious and characteristic feature in the history of these diseases. That every race of man, under every possible variety of cli-

mate, age, and constitution, should be susceptible of the same disease, that this disease should present everywhere the same character, and run through the same stages, and having once occurred, should never again appear in the same individual, though exposed to the utmost malignity of infection, are facts in the history of the animal œconomy which may well excite our curiosity. Their general accuracy is unquestionable, at least so far as the constitution of the human body allows us to acknowledge any such widely extended proposition. Here, indeed, as in every other part of pathology, exceptions occur, and, first, to the principle of universal susceptibility. A few constitutions have been met with, which appear to be completely and permanently insensible to the contagion of small-pox. Again, some individuals, who cannot be made to take the small-pox or scarlet fever at one age, are yet susceptible of it at another. In like manner it is established on undoubted evidence, that small-pox and measles may occur twice in the same individual. Some pathologists have refused to acknowledge the truth of this exception to the general law of the exanthemata, and have attempted to explain away the cases of secondary small-pox, by presuming on the ignorance or the carelessness of the practitioner in attendance, or by designating the mildest of the two attacks chicken-pox. These and similar frivolous arguments do not admit of serious refutation. Such exceptions have undoubtedly occurred; and it is our business to watch nature, and not prescribe to her the course which she is to pursue. No doubt whatever can be entertained with regard to the occasional occurrence of second and even third attacks of scarlatina. They are sometimes milder, sometimes severer, than the primary. Thus it appears, that the laws which govern the recurrence of the several exanthematous fevers differ in different cases.

Attempts have been made by pathologists to explain the causes to which secondary attacks of the exanthemata are to be referred. Sir Gilbert Blane believes that the first attacks are always or nearly always severe; and he argues, therefore, that the secondary attack is owing to the susceptibility of the constitution to the disease being in such individuals *stronger* than in others. Dr. Wells, on the other hand, apprehends, that where a secondary attack occurs, the first will be found to have been mild; that the susceptibility, therefore, is not greater in these cases than in others, but that the primary attack had not been sufficient to *saturate*, as it were, the constitution. The phenomena of modified small-pox, which have lately attracted so much attention, hinge upon this question. Perhaps it will be found, that neither of these explanations is altogether satisfactory, and that the occurrence is attributable to some peculiarity in the constitution of the individual, the precise nature of which does not admit of being developed.

4. The last feature in the general character of the exanthemata is their origin from *specific contagion*. I have already (page 47) explained the difference between the several kinds of contagion, and pointed out a few of the most important principles involved in the doctrine, more particularly such as relate to the operation of *common* contagion, and are subservient to the pathology of fever. An origin from specific contagion is a character of eruptive fevers, but they possess it in common with many other complaints—the plague, psora, syphilis, and hydrophobia. It is this character, indeed, which associates the exanthemata with that tribe of diseases which have been designated by the title of the *morbid poisons*. This phrase has been invented to distinguish these disorders from such as arise from mineral or vegetable poisons, the bites of venomous animals, the exhalations of marshes and drains, and the effluvia arising from the bodies of men living in a very confined space. It is supposed that the poison in all the diseases now alluded to is produced from an animal body already in a state of disease, and therefore it is called a *morbid* poison. The plague has been considered by some authors as an exanthematous disease, but we have elsewhere given our reasons for believing that it is more nearly allied to the typhoid fevers. The yaws, or frambœsia, is a peculiar disease, which, arising from a morbid poison, and running a defined though tedious course, may, perhaps, be admitted into this class.

Materies morbi.—Of the nature of the specific contagion in each of the exanthematous diseases we are completely ignorant, and the subject is altogether inscrutable. It is quite clear, however, that it is something of an exceedingly subtile nature. A single vesicle of cow-pox contains sufficient of the specific matter of contagion to communicate the disease to an incredible number of persons. A single drop is sufficient for each, perhaps a small portion of a drop, and of that there is reason to believe that the bulk consists of the common serum of the blood. This multiplication of a morbid poison in the body of the affected individual is wholly inexplicable. The older physicians applied the analogy of vegetable ferments to the explanation of the phenomenon, and certainly with much ingenuity. The doctrine of a *materies morbi* is satisfactorily proved in the case of small-pox, cow-pox, plague, and syphilis, and the old humoral doctrines have doubtless therefore some foundation in nature. Whether they can be extended, so as to explain the phenomena of other eruptive complaints, and of diseases whose pathological relations to the exanthemata are not so obvious, may, in future times, become an object of inquiry.

The exanthematous contagions were, for a long time, confounded. Small-pox and measles were for many centuries believed to arise from the same contagion. The measles and scarlet fever were considered by Morton to be the same disease, nor was the diagnosis clearly established until the latter periods of the eighteenth century. Some pathologists at present believe there is an affinity between the contagions of small-pox and cow-pox; and within the last few years the notion of the identity of small-pox and chicken-pox has been revived. The origin of all these contagions is involved in obscurity; but though we cannot form the most distant idea how they first got into the world, we can yet, in many instances, trace, with some precision, the periods when they first began to spread as epidemics. It is a very remarkable circumstance that the exanthemata, and the several morbid poisons associated with them, were unknown to the ancient physicians, and did not appear in Europe till after the birth of Christ. To ascertain the countries in which these diseases originally appeared, and from which they were propagated over the rest of the world, will prove an interesting subject of investigation.

Among the peculiarities of *specific* contagions, communication by inoculation has been mentioned: this, however, is not a general law. Measles, chicken-pox, and scarlet fever, cannot be given in this way; and the remaining diseases of the class share this property with several other affections arising from a morbid poison—such as syphilis, gonorrhœa, psora, and Ægyptian ophthalmia.

All the specific contagions, whether febrile or chronic, have a distinct period of *incubation*, during which they lie dormant in the constitution.* It appears to be often as accurately defined as the periods of the fever, and this by an unknown law of the animal œconomy. It admits, however, of some variety, though apparently not so great as in the case of *common* contagion. The latent period of typhus, for instance, is considered to vary from one to six weeks; that of small-pox and plague certainly does not vary more than a few days.

It has always been reckoned a very striking feature in the history of the exanthemata, that they are not compatible with each other, or with any other disorder. In most cases, if another disease be present, the exanthema will not advance. Thus diarrhœa and fever prevent the success of inoculation. Eruptions on the skin retard and modify the appearances of the vaccine vesicle. Cases have been mentioned, where the small-pox and measles occurring together, the small-pox has been delayed until the latter has run its course. So also it has happened that vaccination has been suspended during the progress of measles. This law, however, is subject to numerous exceptions. It has been proved, for instance, that small-pox and measles may coexist. Measles and hooping-cough frequently proceed together. In like manner small-pox and cow-pox, chicken-pox and cow-pox are sometimes observed to advance, each vesicle preserving its own character. The principle, nevertheless, is an important one; and it may perhaps serve to illustrate that well-established fact, that during the prevalence of an epidemic pestilence, other disorders diminish, or altogether disappear.

In Dr. Willan's arrangement of cutaneous affections, it will be found that the natural connections of the exanthemata are broken, and these diseases thrown into other pathological relations, to which they do not appear to have any claim. This has been done under an idea that there is some essential difference between a pimple and a rash, a vesicle and a pustule. These, however, appear to be little more than modifications of each other, and by no means so distinct as to become the foundations of nosological arrangement. The same disease is vesicular at one period, and pustular at another. A slight accident may at any time convert the vesicle into a pustule. Indeed, as a general principle in pathology, it may be stated, that the pustular or vesicular character of an eruption depends upon, and is determined by, the quantity of inflammation existing in the cutis, and the degree of strength in the general system. Upon the whole there can be little doubt, that Dr. Cullen's classification of the exanthemata is pathologically more correct, and in practice more applicable, than that suggested by Dr. Willan; and we shall follow it therefore in the subsequent pages.

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* See "Observations on the Incubation of Morbific Germs," in the London Medical Gazette, vol. ix. p. 743.

In any sketch of the pathology of the febrile eruptions, it is necessary to notice the important fact, that disease of the great mucous membranes of the body is implicated in them, as intimately, and to almost as great an extent, as the skin itself. The structure and functions of the skin and mucous membranes bear a close resemblance to each other, and many pathological considerations tend to prove that there exists also a very close analogy in their diseases. It would be a rational conjecture therefore, that in fevers where the skin is extensively concerned, the mucous membranes would participate, and observation favours the opinion. The principle appears to be of very general application, and is illustrated by the phenomena of all the principal exanthemata. If we extend our observations still further, we shall find that there is a tendency in all diseases arising from morbid poison, whether exanthematous or otherwise, to affect the mucous structures of the throat. This is strikingly exemplified in the instance of lues venerea and erysipelas. The phenomena of hydrophobia also give some countenance to it.

As we proceed in the separate examination of the diseases of this order, we shall have frequent occasion to refer to the general views of the exanthemata which have been taken in this chapter, and which, though avowedly obscure, may yet give us some assistance in explaining their several phenomena.

CHAP. II.

SMALL-POX.

Introduction of the Small-pox into Europe. Ravages committed by it. First accounts of Inoculation. Of the natural Small-pox. Distinct and Confluent Small-pox. Malignant Small-pox. Secondary fever. Modified Small-pox. Complications. Prognosis. Morbid Anatomy. Pathology of Small-pox. Causes of confluence. Recurrent Small-pox. Treatment of Small-pox during the maturative stage; during the stage of decline and secondary fever. Small-pox after Vaccination. Theory and Practice of Inoculation.

The attempts made at different times to prove the antiquity of small-pox have signally failed; and it is now the generally received opinion that the disease first appeared in the course of the sixth century. Procopius gives the history of a malady previously unknown, which first appeared at Pelusium in Ægypt, A.D. 544. The obscurity of its origin, the difficulty of its cure, the universality of its devastations, and, above all, a complete immunity from second attacks, bespeak this epidemic to have been truly small-pox. Several circumstances concur to render it probable that the diffusion of small-pox, both through the East and West, was mainly attributable to the successes of the Saracen armies, led forth to conquest by Mahomet at the æra of the Hegyra, A.D. 622. For the first description of small-pox we are indebted to Rhazes, the earliest of the Arabian authors, who flourished in the tenth century.

The researches of antiquarians lead to the belief that small-pox first appeared in England about the year 900. All authors concur in representing the dreadful mortality occasioned by this pestilence wherever it appeared, and the consequent terror which it every where excited. Never was this more strikingly manifested than early in the sixteenth century, when some of the successors of Columbus carried the disease to America. The record of the desolation that followed it is painful to contemplate. It is stated, on the authority of the Spanish historians, that in a very short time after the infection reached Mexico, three millions and a half of people were destroyed by it in that kingdom alone.

The increasing prevalence and almost incredible malignity of the small-pox rendered it an object of investigation to all succeeding authors. Sydenham in particular studied the disease with a closeness of observation almost unparalleled; but his chief merit consists in having successfully opposed the old or heating method of treating it. Boerhaave, who succeeded Sydenham, deserves especial notice as the author who first put contagion prominently forward as its exciting cause.

Small-pox had been known and studied by physicians for a thousand years before any idea prevailed that its course could be controlled, and its virulence assuaged, by any artificial means. For this great improvement in medical practice we are indebted originally to Asiatic ingenuity; and for its general adoption in Europe to the acute observation and spirited efforts of Lady Mary Wortley Montague. The practice of inoculating for the small-pox began at Constantinople about the year 1700, and was first tried in London in 1721. For a long time the practice was viewed with great distrust, nor were its merits fully appreciated till towards the latter period of the last century. This change in the ideas of the world regarding the value of inoculation, may be dated from the general adoption of the Suttonian practice in 1766. The close of the century, however, which saw the rise of inoculation, was destined to witness its fall. In 1798, Dr. Jenner announced the discovery of vaccination, soon after which the general practice of inoculation declined, and has never since been revived.

A multitude of facts regarding the small-pox have been collected together by the researches of authors, which hardly admit of being detailed in the compass of an elementary work; nor, under present circumstances, does it seem necessary to devote to it that degree of attention which it received in earlier times. I shall content myself therefore with a general outline —1. Of the usual effects of the variolous poison upon the animal œconomy; 2. Of the modifications which these undergo from the circumstance of prior vaccination; 3. Of inoculation, or the modification occasioned by the mode of its reception into the system.*

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* Those who may desire a more elaborate detail of the phenomena, pathology, and treatment of small-pox, are referred to the article SMALL-POX, in the Cyclopædia of Practical Medicine, vol. iii. p. 735, by the Author of this work.

I. OF THE NATURAL SMALL-POX.

Stage of incubation.—The contagion of small-pox has a latent period, which averages twelve days, the extremes being seven and twenty-one. It includes the whole period, from the reception of the virus to the occurrence of eruption. In some instances the patient, during the greater part of this time, is weak, languid, and low-spirited, with impaired digestion and unquiet nights. In the greater number of cases, however, no uneasiness is felt until the eleventh or twelfth day after exposure to contagion, when an unexpected and severe rigor announces the setting in of the initiatory or *eruptive fever*. This is often undistinguishable from an attack of common or inflammatory fever. The suddenness of the seizure is the best guide; but a severe pain of the back, pain of the epigastrium, increased on pressure, with vomiting, giddiness, or headache, assist in the diagnosis. Children are often very drowsy at this period, and an epileptic paroxysm is not uncommon. Adults sometimes become delirious. The patient staggers, and the expression of countenance is anxious and haggard. These evidences of a serious implication of the brain and nervous system betoken great impending danger. In a few cases the eruptive fever of small pox is attended with the symptoms of acute malignity, and death has even taken place prior to any unequivocal appearances on the skin.

The duration of the initiatory fever is very uniform. In a large majority of cases the eruption shows itself at the end of forty-eight hours from the occurrence of rigor. It is sometimes protracted to seventy-two hours, but is never shortened. This is an important means of distinguishing small-pox from the other exanthemata.

Stage of maturation.—The eruption of small-pox shows itself, in almost all cases, first, upon the forehead and wrists, and, gradually extending over the other parts of the body, is usually completed in twenty-four, or at furthest in thirty-six hours. On the appearance of eruption the febrile symptoms abate, and in very mild cases are never renewed. In the severer kinds of small-pox, they only experience at this period a slight remission. The further progress of the disease depends so much on the *quantity* of the eruption, that nosologists have assumed this as a basis of distinction, and accordingly divide small-pox into two species; the *distinct* and the *confluent*. This arrangement, however, does not seem sufficient for practical purposes; and I therefore prefer a fivefold division, into the *distinct*, the *simple confluent*, the *malignant confluent*, the *coherent*, and the *modified*. The peculiarities in each of these forms of the disease I shall now shortly advert to, premising that, in all, the disease divides itself into three stages; the first terminating by the appearance of the eruption; the second by the maturation of the pustules; and the third by the falling off of the scabs.

Distinct small-pox.—The distinct small-pox shows itself in the form of elevated papulæ. On the third day a small vesicle, having a *central* depression, may be observed on the summit of each pimple. It contains, at this period, a minute portion of a thin transparent lymph. An inflamed margin, or *areola*, now forms around it; which, when the vesicles are tolerably numerous, diffuses considerable inflammation over the neighbouring skin, so as to give it a damask rose colour, and as the eruption advances, to occasion swelling of the face. About the sixth day the vesicles lose their central depression, and assume a spheroidal form. Suppuration has now taken place, and the pustules will be found to contain a thick matter of a yellowish colour. On the succeeding day, those which first appeared upon the face burst, and upon the eighth from the date of the eruption, scabbing commences over the body generally. The degree of fever present varies with the quantity of eruption, the habit of the patient, and the circumstances in which he is placed. In general, the fever accompanying the distinct form of small-pox is slight, and subsides entirely on the eighth day. There is generally more or less tenderness of the skin present. In about ten days more the crusts fall off; and the skin, though left for a time of a dark brown colour, is ultimately restored to its natural condition.

Such is the usual course of the eruption of distinct small-pox, but it is subject to considerable variety. Upon the face it is sometimes more rapid, while upon the extremities it is commonly more tardy, the pustules on the feet and legs being seldom fully ripened until the tenth or eleventh day from their first appearance. Their contents too vary in point of consistence, and hence have arisen those distinctions of vesicular, vesiculo-pustular, crystalline, horny, and water-pocks, which have been noticed by authors.

Arrangement and structure of the pock.—This curious subject was diligently investigated by Cotunnius in 1771. Variolous papulæ are usually arranged in groups of three or five, assuming a crescentic or semi-circular shape. By the union of two groups a complete circle of papulæ is sometimes formed. They appear to have their seat in the *rete mucosum*, but the inflammation dips into the cutis vera. The vesicles are singularly organized, being divided into six or eight cells tied together in the centre, which for several days is depressed. This depressed centre, or *umbilicated* form of vesicle, is very characteristic of small-pox. The specific matter or poison of small-pox is secreted by the parietes of these minute cells, and, by distending them, causes the rupture of the central band, and the consequent *acumination* of the pustule.

CONFLUENT SMALL-POX.

For the first day or two no differences are perceptible between this and the preceding species, except that the patient is more languid and oppressed. On the third day, however, the change becomes apparent, and the following are the chief peculiarities in the progress of the confluent disease :—

1. *Implication of the subjacent cellular membrane.*—The eyelids swell, and by the fifth day the patient is unable to see. The scalp is tense and tender. The parotid glands participate in the surrounding cellular inflammation, and salivation takes place. The limbs are tumid. The vesicles on the face run together into one continuous bleb, which, instead of a thick yellow pus, contains a thin brownish ichor. The face looks pale and doughy. On the trunk and extremities, the vesicles, although not actually *confluent*, are without areola, pale, and flaccid. When the pustules break, extensive black or brown scabs are formed, attended with intolerable *fœtor*. The accompanying constitutional symptoms are very severe. The pulse is rapid, with extreme debility, restlessness, and total want of sleep.

2. *Implication of the mucous membranes.*—In many cases of confluent small-pox, the mucous membrane of the nose, mouth, larynx, and trachea, is occupied by a specific eruption, which follows a like course with that of the skin. The tongue and palate appear covered with vesicles. Heat of the mouth, pain of the throat, difficulty of swallowing, hoarseness, dyspnœa,

cough, and copious viscid expectoration, are the symptoms to which it gives rise. As the disease advances, the glottis becomes more and more narrowed, until at length the passage is completely blocked up, and suffocation ensues. Previous to this, however, the patient has experienced the usual effects of imperfectly oxygenated blood—viz., a swelled and purple tongue, lividity of areola, great restlessness, a low muttering delirium, coldness and paleness of the extremities.

3. *Implication of the brain and nervous system.*—The chief evidence of this is early and violent delirium (delirium ferox), attended in many cases with a strong disposition to self-destruction. Variolous delirium is usually accompanied with redness of the conjunctiva, a contracted pupil, and wild expression of countenance. It is always most violent in the early periods of the disease. Most of these cases prove fatal, and generally by coma.

Malignant small-pox.—Such are the phenomena of *simple confluence.* The student may imagine in how great a degree its dangers are aggravated, when to them are superadded the symptoms of malignancy and putrescency. They are, hæmorrhage from the nose, lungs, stomach, and bowels, petechial vesicles, gangrene of the extremities. Females suffer from violent menorrhagia, and abortion never fails to occur to such as are pregnant. These cases sometimes prove fatal as early as the fifth, and seldom survive beyond the ninth day of the disease (the seventh of eruption).

Semiconfluent small-pox.—It must be obvious, that in nature there can be no exact line of separation between the distinct and confluent kinds of small-pox. They run into each other by insensible degrees. Now to those cases which are intermediate between the perfectly distinct and confluent, we give the name of *coherent*, or *semiconfluent.* This term applies, first, to cases where the eruption is *uniform*, but where the papulæ are not sufficiently numerous to coalesce before the fifth or sixth day; and, secondly, to those where the eruption is *in patches*, confluent in one part, and distinct in another.

Secondary fever.—The decline of many cases of the confluent and semiconfluent varieties of small-pox is attended with a remarkable exacerbation of the constitutional symptoms, constituting what is called secondary fever. It occurs only in those cases where the cellular membrane has been implicated;

and it seems to arise from a continuance of the inflammatory action in that tissue. About the ninth or tenth day, when the pustules have maturated, the surface becomes hot and dry, the tongue white, the pustules hard and scaly. The pulse increases in frequency, and the patient is tormented with an unextinguishable thirst. Secondary fever has now set in, which, in its progress, exhibits an almost endless variety of symptoms. In many cases it is accompanied with some form of inflammatory action on the surface, such as scarlatina, erysipelas, boils, abscesses, and carbuncles, often of great extent and depth. The cutis vera is partially destroyed by ulceration, which, if the patient survives, occasions pits and scars. Sloughing sores take place about the elbows, hips, and sacrum, or the whole surface is occupied with ecthymatous pustules. All these harass the patient, wear out his strength, and perhaps ultimately destroy him. Gangrenous inflammation often shows itself on the genitals.

In a certain number of cases the brain suffers during the progress of secondary fever. Children are carried off by hydrocephalus; adults by coma; and sometimes, where a great extent of surface is destroyed, that singular state of the nervous system comes on, so well known to surgeons as a consequence of severe burns and scalds. The symptoms of it are, general tremors, low delirium, a weak and rapid pulse, a dry brown tongue, and collapse of the features, terminating in death.

Variolous ophthalmia.—Secondary fever is accompanied in a few cases with a very violent form of ophthalmia, rapidly involving all the structures of the eye, and destroying in a few days its entire organization. In some cases the sloughing is partial, and the result is staphyloma. It is rare to find both eyes thus affected; but such cases have occurred, ending in total and irremediable blindness.

Variolous pleurisy.—The destructive effects of secondary fever are not limited to the structures now described. In some cases those within the thorax suffer, more especially the *pleura.* In general the pleuritic symptoms are acute, and strongly marked. Sometimes, however, the inflammation is of a chronic or latent kind. In all cases, therefore, a strict attention to the respiratory organs is necessary. Variolous pleurisy proceeds, often very rapidly, to empyema.

Modified small-pox.—Small-pox taken casually is sometimes of an exceedingly mild character. The pustules, though perhaps very numerous and close set, do not run into each other, but maturate separately and *turn*, as it is called, on the fifth day. The eruption on the face and trunk feels hard and seedy, constituting the *variolæ verrucose*, or stone-pock of the old authors; that is to say, the pustules suppurate imperfectly and are surrounded by little areola. The small quantity of matter they contain is often absorbed, leaving the cuticle horny and elevated for many days afterwards. Upon the extremities the eruption scarcely pustulates, but is minute and papulous, terminating by desquamation. Scarcely any constitutional symptoms attend the maturation of this form of small-pox. The patient is able to walk about. He enjoys a good appetite and sound sleep. The unsightliness of the eruption alone disturbs him. No inflammation of the cellular membrane interrupts the convalescence. No pits remain to attest the violence of the disorder. We are warranted as well by etymology as by the custom of old authors, in applying to this mild form of small-pox the term varicella, and to distinguish it from the true or infantile chicken-pox, we may call it the *varicella variolodes*.

Complications.—Small-pox is often complicated with other disorders, such as pneumonia, hepatitis, hooping-cough. It occurs to weak and delicate persons, unable to cope with a disease of such severity, or to those of extremely plethoric habit. An infinite variety of accidental symptoms may thus be superadded to those already enumerated. In scrophulous constitutions the secondary fever is peculiarly severe, being attended with strumous ophthalmia, irritable ulcers, and glandular enlargements. Fever and erysipelas are sometimes found to attack persons convalescing from small-pox, and again to bring life into hazard.

Prognosis.—The prognosis in small-pox is regulated almost entirely by the form which the disease assumes; but of course the strength of the patient's constitution is, to a certain extent, to be taken into account. Distinct small-pox is a disease of little or no danger; while the confluent variety is attended, even under circumstances comparatively favourable, with imminent hazard to life. When malignancy and confluence are associated, the case is utterly hopeless. The mortality in small-pox simply confluent is about three in five. Semiconfluent cases prove fatal in the proportion of about one in four. Upon the whole, it is computed, that of every six persons who receive small-pox in the natural way, one dies. The most unfavourable symptoms are those which indicate affection of the brain, larynx, and bronchia, violence of fever, and strong determination of blood to the skin and cellular membrane. The most favourable are, quiet of mind, a tongue free from vesicles, a very tender state of the surface, but, above all, a small, soft, and yielding pulse. From the tenth to the thirteenth day is the period of the greatest danger; but to feeble constitutions, and especially to scrophulous children, the sequelæ of the disease are scarcely less formidable than the violence of its crisis.

Causes of death in small-pox.—1. Prior to the maturation of the pustules, death is sometimes occasioned by *malignant fever*. 2. Between the eighth and twelfth days of eruption, the chief cause of death is laryngeal affection, and consequent *suffocation*. 3. During the state of secondary fever, death may take place in three ways—either by sloughing and destruction of large portions of the skin; or by effusion on the brain; or lastly, by supervening pleurisy, peripneumony, or laryngitis. 4. After the third week, death sometimes arises from mere exhaustion, superadded fever, or erysipelas.

Morbid anatomy.—The appearances on dissection in those who die of small-pox are confined almost exclusively to the thoracic viscera.

When small-pox proves fatal about the tenth day, it is common to find evidences of active inflammation in the larynx and trachea. A copious, dark-coloured, and viscid secretion (quite peculiar to this complaint) lines their inner membrane, which is highly vascular. At a later period of the disease, one cavity of the thorax is occasionally found loaded with purulent effusion, the pleura having become implicated in the course of the disease. The substance of the lungs is then consolidated by the pressure of the effused fluid. There are no appearances peculiar to small-pox observable in the head, even where the cerebral affection was most strongly marked during life. Effusion into the ventricles, and on the surface of the membranes, is found in some cases. The abdominal viscera are singularly exempt under all circumstances, from the influence of the variolous poison. Abdominal complications are very rarely met with during life. At the Small-pox Hospital, no vestiges of pustules have ever been traced after death in the cavity of the abdomen. This was also the result of the extensive experience of Cotunnius, who contended that the contact of atmospheric air was essential to the development of the variolous pustule.

PATHOLOGY OF SMALL-POX.

Question of spontaneous origin.—The opinion that small-pox is the product of a specific poison or contagion from without, is general among the pathologists of the present day; but the old physicians believed, and many of the vulgar even now imagine, that it has its origin, like other fevers, either in some state of the air, or in a vitiated condition of the blood and humours. In numberless cases, undoubtedly, it is impossible to trace the source of the contagion, and hence the doctrine of spontaneous origin is to a certain degree supported by fact, but the weight of evidence is in favour of the invariable origin of small-pox by *specific contagion.*

Causes of confluence.—Attempts have been made to ascertain the sources of the different forms which small-pox assumes. By some, the mildness or malignity of the disease have been attributed to differences in the *contagion* from which it emanated. Innumerable facts, however, are upon record disproving this notion, and showing that the severest kind of small-pox may be taken from a case of the mildest sort. The great principle is *idiosyncracy*, or peculiarity of habit. As there are certain constitutions that suffer more than others from lead, mercury, and venereal poison, so are certain systems unusually irritable under the operation of the variolous virus.

But some other circumstances concur. Delicacy in the structure of the skin is probably concerned in the phenomenon; for in this way only can we account for the greater disposition to confluence upon the face than on other parts. The rete mucosum is there loaded with vessels, which have manifestly a greater disposition than common to receive red blood. Further, whatever encourages the blood to the surface of the body has a tendency to produce confluence. Hence it is that a long succession of close and moist weather, exposure to great heat (as in the trade of the sugar baker), the free use of ardent spirits, diaphoretic medicines, the warm bath, and stimuli applied to the skin, aggravate the disease in a high degree; while cold, and frost, and light clothing, and the anti[illegible]tic regimen tend greatly to lessen its severity. Lastly, under certain unknown circumstances of the atmosphere, not only is small-pox more abundant, but it is also more confluent and virulent.

Recurrent small-pox.—The disposition to receive small-pox is so general throughout the human race, that few persons are met with who resist it during their whole lives, when fully exposed to its influence. All ages are alike susceptible of it. It is communicable by the mother to the fœtus in utero, but under such circumstances it has almost invariably proved fatal to the child.[*] There is every reason to believe that a mother who has already passed through the disease may communicate it to the fœtus. In general, one attack of small-pox secures the system from the disease for ever after. Yet some exceptions to this law have been met with.

Dr. Hennen, in the Edinburgh Medical and Surgical Journal,[†] has quoted above one hundred and fifty writers in different languages, and in all ages since small-pox was first described, who have expressly stated their opinion of the occurence of this disease twice in the same individual. Secondary attacks of small-pox, though generally mild and modified, have proved in some instances severer than the primary. Even fatal cases of recurrent small-pox have been recorded by authors of undoubted veracity.

Diffusion of small-pox.—The diffusion of small-pox takes place much more energetically at certain times than at others. The peculiar, or, as it is sometimes called, *epidemic* constitution of the air, which is so favourable to the propagation of small-pox, is not at all understood. The disease sometimes spreads in a dry and warm, sometimes in a cold and moist, state of the atmosphere. Dr. Haygarth imagined that the sphere of contagious influence was very limited, not exceeding a few feet from the person of the patient. There is reason to believe, however, that the distance at which the effluvia cease to be energetic is much greater, but varying according to the condition of the atmosphere. It is probable that infectious effluvia are given off by the lungs as well as the skin, and at every period of the disease, from the commencement of initiatory fever to the termination of the scabbing stage. It is well ascertained,* that for some considerable period after death, the matter of the pustules continues energetic, and will spread the disease both by inoculation and infection.

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[*] For many interesting facts illustrating the communication of small-pox to the fœtus in utero, see Duncan's Medical Commentaries, vol xix. p. 213.

[†] Vol. xiv. p. 400.

TREATMENT OF SMALL-POX.

The general principles of treatment in small-pox were for a long time misunderstood, and measures consequently adopted which greatly increased the mortality of the disease. In the distinct small-pox very little is requisite; and the danger in confluent cases is urgent under any system of management; yet the advantages of a well-regulated treatment are as obvious in small-pox as in any other disease. The principal objects to be kept in view are, to moderate inflammatory excitement, to remove accidental congestions and inflammations, to allay irritation of the surface, and to support the system when exhausted by extensive destruction of skin, or by the efforts necessary to repair such injury.

Treatment of the maturative stage.—During the period of maturation the following plan is to be pursued. A tardy eruption is to be encouraged by frequent pediluvia. When the surface is hot and tender, cooling lotions may be applied; pain of the throat may be relieved by leeches and fomentations. Cough and copious expectoration of puriform mucus indicate the necessity of bleeding from the arm. The same measure is called for when phrenitic or comatose symptoms supervene. Occasionally the loss of blood is useful to diminish the violent determination of blood to the cellular membrane, which occurs in some confluent and semi-confluent cases. In regulating the employment of blood-letting in small-pox, it will be borne in mind that it cannot lessen the number of pustules, nor remove the specific inflammation of the mucous membrane of the larynx and trachea, while it certainly impairs that strength of the body which is requisite to cicatrize a great extent of surface.

Purgative medicines are useful through the whole of the maturative stage. When the pulse is feeble, the skin cold, and the vesicles fill slowly, the tone of the system is to be supported by wine, the subcarbonate of ammonia, and cordials. Opiates are extremely useful in relieving the irritation of the skin and procuring sleep. The diet and regimen is to be strictly antiphlogistic. The chamber should be darkened. The hair should be cut close.

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* See London Medical Gazette, vol. iii, p. 282.

Treatment during the stage of decline, and secondary fever.—Bleeding is seldom advisable at this period, unless pleurisy or coma come on. The propriety of purging during secondary fever was long the subject of controversy, but the question was satisfactorily settled in its favour. Calomel and rhubarb, senna and salts, or castor oil, are the purgatives in most common use. Under very profuse pustulation, the system is to be supported by beef tea, porter, or wine. To absorb the matter, the surface should be profusely covered with some dry powder, such as dried flour, powdered starch, or calamine. Sloughy and gangrenous sores require the liberal administration of wine, brandy, and opium, assisted by cordial draughts containing quinine, camphor, and the aromatic confection.

Much difficulty has always been experienced in the management of the many severe sequelæ of confluent and semi-confluent small-pox—such as ophthalmia, erysipelas, ecthyma, boils, and scrophula. To meet these cases, the ordinary rules of medical and surgical practice, though judiciously applied, are often inefficient. When the constitution is much enfeebled, and the dormant seeds of scrophula are brought into action, tonics are of use, and benefit is derived from sarsaparilla. A generous diet should be allowed, but change of air is the measure of most decided efficacy. The disposition to boils cannot be effectually counteracted by any medicinal treatment. Occasional aperients offer the best prospect of success.

SMALL-POX AFTER VACCINATION.

Small-pox, as it occurs after vaccination, is sometimes found to run its course unaltered in its symptoms and unmodified in any of its features. We cannot, therefore, be surprized if it has sometimes, when so occurring, proved fatal. When the frame is weak and delicate, or the habit plethoric, or when the inroads of small-pox are synchronous with some other disorder, it would be difficult even for vaccination to set bounds to its injurious tendencies. In by far the larger proportion of instances, however, small-pox after vaccination is modified either in the early aspect or subsequent progress of the pustules. So *completely* altered indeed is the appearance of the eruption, on some occasions, by the influence of previous vaccination, and so extremely mild is the character both of the fever and of the eruption, that the true nature of the disease could never have been suspected by one who had not observed it in a variety of instances, and marked the insensible gradations by which its characters run into each other. The *initiatory* fever is generally severe, but in almost all cases recedes entirely on the appearance of the eruption. The pustules are often hard or horny, but never fail to exhibit the diagnostic mark of variolous eruption, depressed centres. They run through their stages with rapidity, maturating for the most part on the fifth day.

That this disease is a modified form of variola there can be no doubt. It follows exposure to variolous contagion; in its severer form it is capable of communicating the *casual* small-pox; and even the mildest varieties of it will, in the unprotected, produce genuine small-pox by inoculation.

It is in all respects the same disease as that which we have described under the title of *varicella variolodes*. These mitigated forms of small-pox have greatly increased in frequency since the general introduction of vaccination, which may be said to have multiplied the number of constitutions that imbibe the small-pox mildly. It has generated a sort of artificial habit favourable to the peaceful reception, or at any rate to the rapid and easy elimination of the variolous virus. There is but little danger attending small-pox, as we usually meet with it after vaccination. Mild as the inoculated small-pox is, this, in the great majority of cases, is even milder. In the few instances where it has ended fatally, the result is attributable to some accidental circumstance, such as its concurrence with diseased lungs, inflamed bowels, or scrophula, rather than to the common and acknowledged effects of small-pox. It may occur at any period subsequent to vaccination. It has been taken by persons who had previously exposed themselves with impunity to the full influence of the variolous contagion. It may be communicated by inoculation, but it is received for the most part in the natural way.

INOCULATED SMALL-POX.

Theory of inoculation.—The object of inoculation is to secure a mild form of the disease, and this result follows in a very large proportion of cases. Nothing has ever been suggested which can throw the smallest light on the singular fact, that a mild disease should be occasioned by the germ being received into the system by means of the cutaneous absorbents. The beneficial influence of inoculation is displayed not only in moderating the quantity of eruption, but in determining the whole force of the disease upon the surface. The mucous membranes are rarely implicated in the inoculated small-pox. The cellular membrane as seldom. Secondary fever, therefore, is a rare occurrence. Malignancy is wholly unknown as a consequence of inoculation. The result is, that the mortality by inoculated small-pox is very small, bearing no sort of proportion to that of the casual disease. The average number of deaths at the Inoculation Hospital, in former times, was only three in a thousand.

Inoculation, however, has its evils. It proves the exciting cause of other disorders, especially scrophula, but more than all, it adds to the public danger by multiplying the foci of variolous contagion.

Practice of inoculation.—When the matter of small-pox is inserted under the skin, a pimple appears on the third day, followed by swelling in the axilla. The pimple them becomes surrounded by a jagged areola, in which small vesications are observable. On the seventh, or at farthest the eighth day from the insertion of the virus, rigors occur, soon after which the eruption appears. The further progress of the disorder differs in no respect from that of the distinct *casual* small-pox as already described. Eruption, however, is not indispensable to the success of inoculation. A complete insusceptibility to future attacks has sometimes been given by means of the single pustule excited artificially in the arm.

We select for the period of inoculation that season of the year, and that time of life, when inflammatory tendencies are least to be expected. It is sufficiently ascertained that beyond a few doses of a cooling aperient, no preparatory course of *medicine* is requisite. A spare vegetable diet, cool air, and subacid drinks, will contribute to render the disease mild and safe. Improper management may of course increase the quantity of eruption, and with it the danger of the patient. Some attention, therefore, ought always to be paid to the treatment of inoculated small-pox; but the principles already laid down are equally applicable in the present case, and will be sufficient, without further detail, for the guidance of the student.

CHAP. III.

CHICKEN-POX.

Character of the complaints called Chicken-Pox. Early opinions regarding Varicella. Description of the Varicella Lymphatica. Diagnosis between it and the Varicella Variolodes. Pathology. Inoculation of Chicken-Pox. Controversy respecting its identity with Small-Pox. Treatment of Chicken-Pox.

The term chicken-pox is familiarly applied to all those eruptive complaints in which, after a brief attack of fever, the skin is covered generally, or partially, with vesicles or imperfect pustules, which run through their stages of maturation and decline in three, four, or at furthest five days, the attending constitutional symptoms being slight, without any threatening of danger. Such disorders are very common. They occur both in infancy and mature age.

From very early periods pathologists have occupied themselves with attempts to determine the nature of these complaints, and more especially their relation to small-pox. Some believe them to be merely modifications of small-pox and the result of the variolous virus. Others consider that under the term *chicken-pox* are included different kinds of disease, analogous to each other in their progress and termination, but differing in their causes and earlier phenomena. Believing this view of the question to be well founded, I have given, under the head of small-pox, a description of that class of cases, which are characterized by imperfect pustulation, occurring chiefly in adults, and preceded by two or three days of fever. I now proceed to notice those which have for their chief features a sudden eruption of vesicles, preceded by little or no fever, and occurring almost exclusively in the periods of infancy and childhood.

VARICELLA LYMPHATICA.

History of varicella.—The milder forms of varioloid eruption attracted attention at very early periods. Rhazes, the first acknowledged author on small-pox, noticed a mild or spurious eruption which gave no protection from that disease when it prevailed epidemically. Ingrassias, a Sicilian physician, described such a disorder in 1550 with considerable accuracy, and he has, consequently, been dignified as the original writer on *varicella*. Vidus Vidius about the same period alludes to the disease under the title of *chrystalli*.*

Sydenham, at a somewhat later period, passes varicella over almost without notice; but Morton, in 1690, details several cases of it under the title of *variolæ maxime benignæ*, and to him we are indebted for introducing into medical nomenclature the name by which it was then, and has since, been familiarly known, the *chicken-pox*. The authors of this early period concurred in opinion that such a disorder afforded no protection from small-pox, but with regard to its nature they differed, some regarding it as allied to small-pox, others viewing it as altogether distinct from that disease.

The principal writer on varicella during the eighteenth century was Dr. Heberden, who, in 1767, published in the first volume of the Transactions of the Royal College of Physicians a description of the disease, professing to give a full and accurate account, not only of its symptoms, but of its pathological relations. Dr. Heberden paid little attention to the statements of preceding writers; his descriptions and doctrines are obviously drawn from his own extensive experience, and in such repute was he held, that for a long series of years this paper was looked upon as the standard authority on the disease. The leading characters of chicken-pox, as given by Dr. Heberden, are as follows. The initiatory fever is slight. The eruption is vesicular, terminating on the fifth day by minute crusts. It occurs both prior to and after small-pox. It is a different disease from small-pox, and gives no protection from it. It arises from a specific contagion, and affects the same individual but once during life. It is capable of being transmitted by inoculation. The eruption thence resulting may, with hasty and inexperienced observers, pass for the small-pox, and mistakes have in consequence arisen.

It is curious to observe that, notwithstanding his conviction of the essential difference between chicken-pox and small-pox, Heberden applied to the former disease the name of *variolæ pusillæ*. The term varicella was first employed by Vogel in 1764.

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* Nearly a century afterwards (namely, in 1646), Riverius quotes this description, and gives, chiefly from Ingrassias, the following account of the malady:—"Est et tertium pustularum genus, pueris familiare, et variolis simile quoad magnitudinem et figuram; sed in eo ab iis distinguitur quod variolæ cum rubore et inflammatione appareant. Hæ vero albæ sunt, et veluti vesiculæ, seroso humore repletæ, quæ intra triduum disrumpuntur, et exsiccantur, nullumque afferre solent periculum, et plerumque sine febre erumpunt."

Dr. Willan, in 1806, contributed a little to our knowledge of varicella by some observations published in the seventh and eighth sections of his work.* He therein describes, with great minuteness, the appearances of varicellous eruption, which he subdivides into three varieties, the lenticular, conoidal, and globate. In 1820, Dr. Thomson of Edinburgh, in a work of much labour and research,† again opened the questions connected with the subject of varicella. During his investigation of the epidemic which prevailed in Edinburgh and other parts of Scotland during the years 1818 and 1819, he was led to the belief that the chicken-pox of Morton and Heberden was only a modification of variola.‡

Description of the varicella lymphatica.—This disease, called chrystalli, variolæ pusillæ, spuriæ, lymphaticæ, and volaticæ, the chicken-pox of Morton, the pemphigus variolodes vesicularis of Frank, the varicella of Willan, is a complaint chiefly observed in infants and children of tender years. It generally shows itself without symptoms of premonitory fever. Such, at least, is the opinion of Heberden, Plenk, and Bryce, and with it our own observation corresponds; but Dr. Willan, whose authority on all subjects of cutaneous disorder is deserving of respect, remarks that he does not remember to have seen any case of varicella without some prior disorder of the constitution, lasting one, two, or even three days. The symptoms then observed, he says, are languor, a disposition to sleep, a furred tongue, hot skin, quick pulse, a sore throat, with pains in the head, back, or limbs. The eruption of chicken-pox usually commences on the shoulders, neck, and breast. The scalp and back are almost invariably occupied with eruption, while the face, which never escapes in small-pox, is for the most part but very slightly affected in chicken-pox.

The eruption is composed, from the very first, of vesicles, about the size of a split pea, perfectly transparent, and covered simply by the cuticle. When very copious, the body has the appearance of having been exposed to a shower of boiling water, each drop of which had occasioned a minute blister. The vesicles of chicken-pox vary in shape. Dr. Willan has described them as being lenticular, conoidal, or globate. They are usually very numerous, but distinct. Mr. Ring is, we believe, the only author who has described a case of confluent varicella.* They are surrounded by a very slight degree of superficial redness or areola. Successive crops of them appear for two or three days, and while the new vesicles are forming, the first are beginning to shrivel. The contained fluid is at first thin and perfectly transparent. On puncturing the vesicle at this period, the clear lymph is evacuated, and the cuticle falls to the level of the surrounding skin. There is no hardness in the subjacent cutis vera. Many of the vesicles burst spontaneously or are broken by the second or third day. In those that remain after that period the lymph becomes of a light straw colour, or slightly opaque, so as to resemble whey. The vesicles are often accompanied with a sense of tingling. When itchy and irritated by rubbing, they sometimes take on sufficient inflammation to convert the lymph on the third day into an imperfect pus. The scabs of varicella are small and gummy, formed by the concretion of the exuding lymph. They desiccate very quickly, and fall off, not in a mass, but in minute grains. In a few cases supercial marks or cicatrices are left by them, which, however, are rarely permanent in after life. The whole course of the disease seldom if ever exceeds a week. During the progress of the eruption to maturity there are no constitutional symptoms of the slightest importance. The tongue is clean, the pulse of natural frequency, the appetite good, and the rest undisturbed.

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* On Vaccine Inoculation, 4to. p. 86.

† Account of the Varioloid Epidemic of Scotland, 1820.

‡ For a more detailed account of the opinions of authors concerning varicella, see Cross on "The Variolous Epidemic of Norwich," part 2, chap. 2. Sketch of the History of Varicella.

Diagnosis of varicella lymphatica.—The only disease with which chicken-pox is liable to be confounded is that which we have already described under the title of modified small-pox, or *varicella variolodes*. There are two principal and characteristic points of difference between the disorders.

First, in the true lymphatic varicella there is no premonitory fever. In even the mildest form of varioloid varicella there is fever, and very often severe affection of the brain and nervous system (headache and delirium) preceding for forty-eight hours the development of the eruption. Secondly, in the true chicken-pox the vesicles have not that regular organization which we have described as belonging to, and actually essential to the existence of, variola, even in its mildest aspect. The vesicles of chicken-pox have neither a hard papuliform base, nor cells, nor central depression. They are mere elevations of cuticle, of irregular and undetermined shape. Such are the *essential* diagnostic characters. Other points of distinction between chicken-pox and modified small-pox have been mentioned, such as the comparatively greater rapidity in the progress of the former, the greater firmness of the resulting scab in the latter, and the shape and permanency of the cicatrix, but these are less to be relied on.

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* See London Med. and Phys. Journal, vol. xiv. p. 141. 1805.

We may sum up the whole in the following words. When there is little or no perceptible premonitory fever; when the eruption is distinctly vesicular from the earliest period; when the punctured vesicle falls completely to the level of the surrounding skin; when the crusts which succeed are yellowish, scaly, irregular in shape, and not elevated, the disease is the true chicken-pox. On the other hand, when, after a period of feverish disturbance, the eruption exhibits in its earliest stage the appearance of a solid tumour; when, on the third day, after discharging the contents of the vesicle, a firm tubercle is found beneath it; when the resulting crust is brown, compact, defined, of a clear horny smoothness, and sensibly elevated above the surface of the skin, the disease is small-pox under some of its modifications, capable of communicating small-pox to others, both by inoculation and infection.

Pathology of varicella lymphatica.—This disease is almost peculiar to infantine life. It seems as if the fine and delicate skin of the infant was requisite for its development. Willan, however, has described an undoubted case which occurred in the person of a gentleman thirty years of age; and in one instance, at the Small-pox Hospital, I observed the disease, in a very genuine form, attacking an adult female. Chicken-pox occurs to persons once only in the course of life. This opinion was first avowed by Dr. Heberden, and its correctness has since been generally acknowledged. Many persons, however, pass through life without undergoing it. It may sometimes be seen running its course along with, and uninfluenced by, perfect vaccination.*

The points in the pathology of varicella lymphatica which have been principally disputed are,—1. Its communicability by inoculation; 2. Its origin, whether by specific contagion or by a contagion common to it and to variola. These topics will require distinct investigation.

1. *Inoculation of chicken-pox.*—Dr. Heberden does not appear to have witnessed any instance of inoculating with varicellous lymph, but he implies that such a mode of communicating the disease is possible, because he says that mistakes have thence arisen. Dr. Willan has a chapter expressly devoted to the inoculation of varicella; but the evidence on which the author relied as establishing the fact is slender and unsatisfactory. Four cases only are recorded. In two of these the experiment was confused by variolous inoculation being practised at the same time. In one case no result followed. In the only case which can be in any degree relied on, as affording a presumption that chicken-pox is communicable by inoculation, a small vesicle raised upon a red and somewhat hard basis was discernible on the twelfth day, followed by two small vesicles on the shoulder, which disappeared in two days. It is obvious that nothing satisfactory can be deduced from such an occurrence.

The experiments of Mr. Bryce, to determine the question of varicellous inoculation, are far more decisive. This author states† that "he has taken lymph from the vesicles of true varicella, with the greatest care, at all periods of the disease and at all seasons of the year; that he has himself inoculated, and seen others inoculate with it, children who had never undergone either small-pox or cow-pox, to the number of thirteen, yet in none of these was this disease, nor any thing like small-pox, ever produced. In one or two cases a slight degree of redness was observed for two or three days; but in all the rest no effect followed." These experiments are now justly considered as having settled the question, and satisfactorily shown the impossibility of propagating the genuine lymphatic or infantile chicken-pox by inoculation.

2. *Common origin of chicken-pox and small-pox.*—All

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* See London Medical Gazette, vol. ii. p. 633.

† See Thomson on Varioloid Diseases, p. 74.

authors are agreed that chicken-pox is readily communicated from one child to another (not having previously undergone it) by casual infection. It is a disorder often observed to spread epidemically, affecting in succession all the younger branches of a family or school; and it is generally affirmed that the contagious quality of chicken-pox is of a peculiarly diffusible nature. Dr. Thomson of Edinburgh, as we have already remarked, has taken much pains to revive the notion suggested at a very early period, and openly avowed by Van Swieten and Sauvages, that the contagion of chicken-pox is not *sui generis*, but merely a modification of the variolous virus; in other words, that the mildest lymphatic chicken-pox and the worst confluent small-pox have a common origin.* The principal arguments which Dr. Thomson brings forward in support of this position are,—first, that he finds in the records of medicine no unequivocal examples of chicken-pox prevailing epidemically without cases of small-pox appearing *at the same time*; secondly, that the most strictly vesicular eruptions have occurred after exposure to *variolous* contagion, and where, in point of time, it was reasonable to refer the disorder to such a source; thirdly, that he had never witnessed chicken-pox in those who had undergone small-pox; fourthly, that chicken-pox and modified small-pox run into each other by such minute shades of difference, that no unerring diagnostic marks between them can possibly be assigned.

Upon the first of these arguments (the non-occurrence of chicken-pox without simultaneous small-pox) Dr. Thomson placed great reliance; but since the date of his publication facts have come to light which completely disprove it. Thus, for instance, it has been ascertained that from the year 1809 to 1823, chicken-pox was annually observed at Copenhagen without concomitant small-pox. Since that time both diseases have prevailed at intervals epidemically, but always under circumstances which satisfied the physicians of the town that their sources were distinct.†

The further arguments which have been adduced in favour of the *specific* nature of varicellous contagion are these:—1. It is contended, in opposition to Dr. Thomson, that the characteristic marks of chicken-pox, particularly during the first three days of eruption, are well-defined and easily distinguished. 2. That chicken-pox is not propagable by inoculation; whereas every case of eruption elevated on a solid tuberculous base, and possessing a cellulated structure, however mild in its aspect and accompanying symptoms, is yet capable of communicating genuine small-pox to others by inoculation. Several cases corroborating this position have occurred within our own observation. 3. That the vesicular chicken-pox occurs equally in those who have and those who have not been vaccinated; that prior vaccination in no degree alters its character or course, while, on the other hand, vaccination proceeds with perfect regularity after the occurrence of chicken-pox; a circumstance that never happens after small-pox.

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* Account of the Varioloid Epidemic of Scotland, Edinburgh, 1820.

† *Dr. Möhl.* De Varioloidibus et Varicellis. Copenhagen, 1817. Also Edin. Med. and Surg. Journal for January, 1828. No. xciv. p. 186.

These arguments appear sufficient to establish the doctrine that small-pox and lymphatic chicken-pox are in reality different diseases, arising from different poisons.

Treatment of chicken-pox.—On the treatment of a disorder so mild in its nature, and so free from all sympathetic disturbance of the system, it is unnecessary to add much. The exhibition of any mild aperient medicine (such as rhubarb and magnesia) during the progress of the eruption, and again towards its decline, includes all that is essential.

CHAP. IV.

VACCINATION.

Introduction of Vaccination. Phenomena of cow-pox. Irregularities. Complications. Recurrent cow-pox. Bryce's test. Theory of Vaccination. Identity of the vaccine and variolous Poisons; and of the cow-pox and equine-pox or grease. Inaptitude to cow-pox. Occurrence of Small-pox after Vaccination. Causes of such occurrence. Deterioration of Virus. Imperfect Vaccination. Variolous diathesis. Decadence of vaccine influence. Improvements suggested in the practice of Vaccination.

The close of the eighteenth century was rendered memorable in the annals of medicine by the publication of Dr. Jenner's essay, entitled "An Inquiry into the Causes and Effects of the

Variolæ Vaccinæ, or Cow-pox."* For more than twenty years he had been engaged in investigating this very curious subject, and in drawing from the dark recesses of rural tradition a pathological fact which might be rendered available to the whole human race. Dr. Jenner confidently announced that the cow-pox, when it has once passed through the human body, removes for ever the susceptibility of small-pox. He even ventured so far as to state his conviction that it was capable of extirpating small-pox from the earth. These statements, corroborated as they were by the experiments first instituted, made so strong an impression on the public mind, that, in the year 1800, vaccination had superseded inoculation in most parts of this country. The practice spread with surprising rapidity over every quarter of the globe, and still holds its place in public esteem. In consideration of the vast importance of the subject, not to the pathologist only, but to the world at large, who look to vaccination as their security from a most loathsome and fatal disorder, we shall treat at some length of the theory and practice of vaccination.

PHENOMENA OF VACCINATION.

Progress of the vesicle.—When vaccination has been successfully performed on a healthy child, the incision may be felt elevated on the second day, and on the third, if examined with a magnifying glass, appears surrounded by a slight efflorescence. On the fifth day a distinct vesicle is formed, having an elevated edge and depressed centre. On the eighth day it appears distended with a clear lymph. The vesicle, on this, its day of greatest perfection, is circular, and either pearl-coloured or slightly yellow. In its form and structure it resembles the pustule of small-pox. Its margin is turgid, firm, shining, and wheel-shaped. It is composed of a number of cells, by the walls and floor of which the specific matter of the disease is secreted. On the evening of the eighth day an inflamed ring, or areola, begins to form around the base of the vesicle, which continues to increase during the two following days. This areola is of a circular form, and its diameter extends from one to three inches. When at its height on the tenth day, there is considerable hardness and swelling of the subjacent cellular membrane. On the eleventh day the areola begins to subside, leaving, as it fades, two or three concentric circles of a bluish tinge. The vesicle before this has burst, and its surface acquired a brown colour. The lymph which remains becomes opaque, and gradually concretes; so that about the end of the second week the vesicle is converted into a hard round scab of a reddish brown colour. This scab contracts, dries, blackens, and, about the twenty-first day, falls off, leaving a cicatrix, which is permanent in after-life, circular, somewhat depressed, striated, and indented with six or eight minute pits, corresponding to the number of cells of which the vesicle had been composed.

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* The date of the publication was June, 1798.

The constitution generally sympathizes about the seventh or eighth day. The child is restless and hot, and the bowels are more or less disordered. This commonly subsides in two or three days. A few children pass through the disorder without the slightest indication of constitutional disturbance, which is not to be looked upon as by any means essential to the success of the vaccine process. About the tenth day a papulous eruption of a lichenous character frequently shows itself on the extremities, and sometimes extends to the trunk of the body. It continues for a week, and occasionally lasts after the scab has fallen off. This vaccine lichen is chiefly met with in children of full habit, where numerous vesicles had been raised on the arm, which discharge freely. It is an accidental occurrence, which, like the constitutional irritation, indicates a full effect upon the system, but is not deemed requisite to ensure it.

Of the irregular vaccine vesicle.—Imperfect vaccination is not characterized by any uniform sign or criterion, but exhibits in different cases different appearances, such as pustules, ulcerations, scales, and irregular vesicles. The most common form of irregular vesicle is marked at its commencement by very troublesome itching, so great as to provoke scratching or rubbing, to which the subsequent appearances are generally, but most unfairly, attributed. The vesicle throws out a premature efflorescence, and advances too rapidly; so that on the fifth day it has attained its height, when it will be found raised on a hard inflamed base. It is acuminated or conoidal, and gives the appearance of a common festering sore produced by a thorn. It is generally of a straw colour, and contains, instead of a clear transparent lymph, some opaque matter or pus. The succeeding scab is small, and of an amber colour, and drops off by the tenth day.

The causes of this irregular vesicle are various. It is sometimes dependent on the state of the atmosphere. Sometimes it may be traced very distinctly to a bad quality of the lymph employed; that is to say, three or four children vaccinated from the same source shall exhibit these irregular appearances; yet the vesicle itself from which the lymph is taken shall show no apparent deviation from the healthy state.

Lastly, irregularity of the vaccine vesicle is sometimes attributable to a bad habit of body,—to what the old authors would have called a foul state of the blood and humours.

Other anomalous appearances.—In some instances the specific inflammation or areola is very violent, extends from the shoulder to the elbow, invades the trunk of the body, and requires to be assuaged by cold lotions and active purgatives. The vesicle, instead of hardening into its proper black scab, is, under these circumstances of local irritation, converted into an ulcer discharging profusely. The inconvenience thence resulting is, however, only temporary. Occasionally, the vesicle about the fifth or sixth day becomes scaly. A species of psoriasis takes the place of areola. In some few cases true erysipelas supervenes. Such anomalies as these, it is needless to say, deprive the cow-pox of all claim to specific properties. A much more frequent but less important variety is the retarded cow-pox. The advance of the vaccine vesicle is without any apparent cause suspended. The areola does not form before the tenth or twelfth day, but ultimately the process is completed. In these cases the success of the vaccination is in no degree prejudiced.

Complications of cow-pox.—It sometimes happens that a child is vaccinated after imbibing the germ of measles or scarlatina. Under these circumstances the cow-pox is generally retarded.* In a case which we have recorded in the London Medical Gazette,† cow-pox was retarded sixteen days, while the measley germ was making the circuit of the constitution. The genuine chicken-pox (varicella lymphatica) will run its course along with cow-pox, and not interfere with any of its phenomena.*

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* Jenner's "Facts and Observations," pp. 137 and 170.

† London Medical Gazette, vol. x. p. 440. This case is also remarkable for the very singular character, and unusual duration, of the initiatory fever of the measles.

Cow-pox occurring along with small-pox.—When cow-pox is inserted during the incubative stage of the casual small-pox, while the small-pox is still latent, the vaccine vesicle for the most part does not advance, or advances tardily and imperfectly. There are exceptions, however, to this rule, and cow-pox and casual small-pox may sometimes be seen running their full course in the same person at the same time. In no case, however, does the cow-pox, so inserted, alter or modify the course of the small-pox. When the variolous and vaccine fluids are inserted into the arms on the same day, each disease occasionally proceeds, preserving its original character. At other times, however, they mutually restrain and modify each other. The vaccine vesicle is smaller than usual, and irregular in its progress, while the variolous pustules which follow are hard and shining, surrounded with little inflammation, and they suppurate imperfectly. The small quantity of matter they contain is absorbed, leaving the cuticle horny and elevated for many days afterwards. Upon the extremities the eruption does not pustulate at all, but is minute and papulous, and terminates by desquamation. It will be found in most cases that even though the eruption be modified in its character, there is, nevertheless, considerable disturbance of the general system under the joint influence of the variolous and vaccine poisons.

When the insertion of the vaccine lymph *precedes* that of the variolous by a period not exceeding four days, both diseases advance locally. Sometimes an eruption of small-pox papulæ follows. At other times the variolous fever is slight and unaccompanied by eruption. Under these circumstances, matter taken from the primary vesicles shall sometimes communicate cow-pox and small-pox respectively, but more commonly the variolous poison predominates, and contaminates the lymph of the vaccine vesicle.

When small-pox inoculation precedes by three or four days the insertion of vaccine lymph, the vaccination advances, but after the tenth day the fluid in the vaccine vesicle becomes purulent, and in that state will communicate small-pox.

Recurrent and modified cow-pox.—When cow-pox has once completed its regular course, the constitution is always left, for a considerable time, at least, unsusceptible of the same disorder. But this law does not hold good when the renewed application of the virus takes place at very short or very distant intervals. If vaccine virus be re-inserted on the fourth, fifth, or sixth day after a regular primary vaccination, the vesicles of the second vaccination are hurried forward in their course, so as to overtake the first crop, and the whole maturate and scab together. The second crop of vesicles, however, are not more than one-fourth of their normal size, and the areola surrounding them is equally contracted. Mr. Bryce, in 1802, very ingeniously proposed to avail himself of this circumstance, and, by testing with vaccine matter on the fifth day, to give a security that the system was under the full influence of the vaccine disorder. This plan has since been extensively pursued, and is known by the name of *Bryce's test.* Some persons have claimed for this suggestion the highest honour, and have even considered Dr. Jenner's discovery as incomplete without it. Dr. Jenner, however, never laid much stress upon it. In doubtful cases it is undoubtedly a prudent practice, but it has been extolled far beyond its real merits. It shows whether or not constitutional influence has been exerted by the primary vesicle, but it does not determine what has been the degree of such influence;—in other words, it does not show whether the constitutional effect has been *complete* or otherwise. As a test, therefore, of the stability of the vaccine protection in after life (in which light alone it can be valuable), Bryce's test is absolutely nugatory.

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* London Medical Gazette, vol. ii. p. 633.

Re-vaccination.—We have noticed four different effects resulting from the operation of re-vaccination. In many cases, especially where the interval from the primary to the secondary vaccination has not exceeded five years, the skin appears completely insensible to the vaccine poison. The inoculated point takes on no inflammatory action, and no greater effect is produced than if the lancet had been dipped in the serum of the blood. More commonly, however, especially at intervals exceeding ten years, the virus irritates locally. In three, or at furthest four days from insertion, an areola of irregular shape appears, surrounding a minute, itching, acuminated, and angry vesicle. Frequently the glands in the axillæ swell, and in particular habits of body, especially in adult females, irritative fever to a considerable extent is superinduced. A scab forms on the eighth day, which soon falls off, leaving no permanent cicatrix. In a third set of cases, a vesicle forms more gradually, without either local or constitutional irritation. A slight areola succeeds, and the vesicle yields, on the seventh day, a considerable quantity of thin lymph; but this lymph will be found, on trial, incapable of propagating the disease. In a fourth set of cases, the second vaccination runs a perfectly regular course. A true circular areola forms on the eighth day, and the lymph will be found to propagate a good and genuine cow-pox.

Surgery of vaccination.—Wherever it is possible, vaccine lymph should be inserted in a recent state. It should be perfectly clear and limpid, and the earlier it is taken the better, for effective lymph must always be in a certain state of intensity. A fifth-day vesicle will often afford a minute drop of lymph of great energy. Lymph may be taken, however, with every prospect of success, up to the eighth and ninth days. On the tenth day the virus is often so much diluted with the serum of the blood as to be unfit for reproduction. The same thing, too, frequently happens to vesicles of the seventh or eighth days, when the lancet of the operator is applied to them too often, or with an undue degree of roughness. A vesicle should always be handled very gently. After the tenth day the virus is scarcely fluid, and can never be relied on.

It is of the utmost consequence to the success of the operation that the lancet be clean and perfectly sharp. Failure often arises from a peculiar toughness of the child's skin, which a blunt lancet penetrates with difficulty. The lymph is consequently thrown back upon the shoulder of the lancet, and not a particle of it enters the wound. The skin should be kept perfectly tense during the performance of the operation by grasping the arm firmly. Six or eight punctures may be made at convenient distances and to a moderate depth. Much importance has been attached to the quantity of blood drawn, it being held that the escape of blood must necessarily wash away the virus. This, however, is a mistake. Provided that a genuine lymph of due intensity has once come in contact with the absorbing surface of the cutis vera, it is a matter of perfect indifference whether little or much blood flows from the wound. The quantity of blood that escapes depends more upon the child's habit than upon the operator. A child full of blood always bleeds freely when vaccinated; but such children exhibit subsequently the most perfect appearances.

Care should be taken, as far as possible, that the child to be operated upon should be in perfect health. During the presence of any disease—at the period of dentition,—when the bowels from any cause are disordered,—or the skin preoccupied by some eruption, whether herpetic or scaly, vaccination should be delayed, unless from the pressure of some extreme necessity. The best age for vaccinating is between the third and fifth month after birth, when the child has acquired plumpness, and before dentition has commenced.

Preservation of vaccine lymph.—The following are the modes of preserving lymph which are now adopted.

1. It may be preserved fluid for several days between two pieces of glass, about an inch square, which fit each other accurately. Lymph thus preserved, even when dry, will often, if carefully moistened with the breath, propagate the disease. 2. Vaccine lymph may be preserved on ivory points shaped like the teeth of a comb. These should be twice dipped in the fluid of the vesicle, and allowed to dry slowly. When used, they should be retained in the wound made by a sharp lancet for about half a minute. They are very effectual. Some vaccinators give the preference to platina points. 3. Vaccine lymph may be kept fluid in small capillary tubes, having a bulb at one end (in shape like a thermometer). They admit of being hermetically sealed. To prevent spontaneous decomposition, the lymph should be collected only in minute quantities. 4. Mr. Bryce announced, in 1802, that vaccine scabs may be made use of to communicate the disease, and it has since been ascertained that this is the most certain mode of transmitting the cow-pox to hot countries. They are prepared for use by rubbing to powder, and moistening with a little luke-warm water to the consistence of a thin mucilage. Punctures made with this artificial lymph ought to be very numerous.

THEORY OF VACCINATION.

Identity of the vaccine and variolous poisons.—Jenner not only believed that small-pox and cow-pox were essentially the same disease, but that the former was a malignant variety of the latter, the parental disorder being the cow-pox. This theory was pointedly marked by the phrase *variolæ vaccinæ*, under which cow-pox was first introduced to the notice of the scientific world. It has been argued in favour of this hypothesis, first, that the cow-pox in the cow is a constitutional and sometimes malignant disorder, approaching in its characters to variola, and in various countries called and considered as variolous; secondly, that cow-pox contaminated by small-pox sometimes loses its virulence, ceases to produce eruptions, and at length takes on the true vaccine character. Dr. Jenner never brought forward any direct experiment in favour of this opinion; but attempts have recently been made to support it, by proving that small-pox can be communicated from man to the cow. From the loose way, however, in which these experiments are detailed, and from the fact of their having been repeated carefully, but without result, under my own observation at the Small-Pox Hospital, and by Mr. Macpherson in India, we may fairly presume that they are incorrect, if not altogether fabulous. It is a singular circumstance that hitherto, so far as our observation extends, no distinct experiments have proved that cow-pox can be communicated from man back to the cow. The theory, therefore, which would explain the preservative power of cow-pox on the principle of its being small-pox, which, in passing through the body of the cow, had become modified, is still unsupported by direct experiment.

Identity of the cow-pox with the grease in horses.—In Dr. Jenner's original essay on vaccination, not only was the connexion between cow-pox and the equine-pox, or grease, prominently put forward, but it was confidently stated that cow-pox never occurs in dairy countries, except where there is access to horses. In other words, Jenner denied the spontaneous origin of the disease in the cow. For several years this question was the source of controversy. Later observations, indeed, have established the identity of the two affections, cow-pox and grease; but they have shown at the same time, first, that cow-pox does originate in the cow without access to horses; and secondly, that it is communicable to man from the horse without the intervention of the cow, and with nearly equal facility as from the cow itself.

Protective influence of cow-pox.—An experience of thirty-four years in the efficacy of vaccination has sufficiently proved the extraordinary power which it possesses of preserving the human body from the assaults of small-pox; but time, which has fully corroborated the general truth of the important law of the animal economy first promulgated by Jenner, has shown also that it is subject to several modifications. These we next proceed to investigate, seeking to determine, so far as observations have hitherto gone, their number and extent.

Constitutional inaptitude to cow-pox.—The predisposition to receive cow-pox is not equally great in all persons, nor at all times; and in some individuals there exists, either through life or for a limited period, an utter unsusceptibility to the vaccine virus. In a certain number of children subjected to careful vaccination, the vesicles will be found small, their progress slow, the areola faint, and the constitutional disturbance trifling. In such habits the absorbents of the arm are inactive, and not more than one out of eight or ten punctures advances. Some of the children who receive vaccination with difficulty are obviously sickly, and labouring under some disease weakening the body generally. In others, this atony of the absorbent system is displayed in conjunction with slowness of dentition, an imperfectly ossified head, and an emaciated aspect of body. On the other hand, it will frequently be found that a constitutional inaptitude to cow-pox co-exists with the most healthy aspect. We may assume, therefore, that it is sometimes dependent on idiosyncrasy. In the former case, the indisposition to receive cow-pox is only temporary; in the latter, so far as we have had opportunities of observing, it continues, and probably through life.

An interesting question here presents itself. Does the constitutional inaptitude to cow-pox denote alike inaptitude to small-pox? It would require a very extended sphere of observation to give a decided answer to this question; but experience seems to show that the predisposition to the two complaints is the same, and that a child who has altogether resisted the vaccine virus will be found equally unsusceptible of small-pox.*

The difficulty of giving cow-pox in a perfect form may be traced in some instances to the state of the atmosphere, which causes a hot, dry, and furfuraceous state of the skin, impeding both absorption and exhalation. Dr. Jenner was well aware that the condition of the skin frequently offered an insurmountable obstacle to successful vaccination; but he does not appear to have connected this with any atmospheric changes. The difficulty of keeping up a supply of genuine lymph in tropical countries has long been known, and admits of an easy explanation on this principle.

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* Gregory on the Recurrence of Exanthematous Fevers, in London Medical Gazette, vol. viii. p. 494.

Occurrence of small-pox after cow-pox.—The number of persons who have taken small-pox after undergoing cow-pox in a satisfactory manner is now so great, that it becomes necessary, with a view to forming an impartial estimate of the value of vaccination, to investigate the subject very carefully. Previously, however, we must revert for a short time to the views originally entertained by Dr. Jenner concerning the complete efficiency of vaccine protection. Popular rumour, we have seen, attributed to cow-pox a certain degree of protecting power over small-pox, but it was only in a certain degree. Jenner, we have seen, took a different view of the nature of vaccine influence, and confidently announced the complete and permanent security afforded by it, provided the disease was received in its perfect form. It is certainly curious, that Dr. Jenner should thus have acknowledged the full value of the popular opinion regarding the security afforded by cow-pox, but should have rejected or treated lightly the qualifying clauses. Experience has now shown that common observation was not less deserving of attention in the one case than in the other. It is well worthy of remark, that in Dr. Jenner's original essay, no mention is made of any cases in which cow-pox failed to afford protection in after life; nor should it be forgotten that the confident announcement then made of the permanency of vaccine protection was founded *exclusively* upon cases of the *casual* disorder.

Proportion of the vaccinated who take small-pox.—Various attempts have been made to ascertain the actual proportion of those who are effectually and permanently secured by vaccination, to those who subsequently receive small-pox; but on this point there is great difficulty in attaining even an approximation to the truth. Mr. Cross of Norwich calculates "that of the vaccinated, not more than one in twenty will be in any way affected by the most intimate exposure to small-pox contagion;

and less than one in fifty will have the disease in a form answering to the generally received descriptions of modified small-pox." These calculations, however, are grounded on very imperfect data.

Within a very few years after the discovery of vaccination, physicians began to record cases of succeeding small-pox; but in almost all these instances there was either some doubt as to the correctness of the vaccine process, or the disease was so mild as to suggest doubts of its being really variola. In process of time these cases became both more numerous and less equivocal, and now they are familiar to every one engaged in practice. The experience of the Small-Pox Hospital during the last twenty years furnishes many useful facts which bear upon this question. It has shown, for instance, how much more frequent small-pox after vaccination is among adults than children. Very few children have been received into the hospital under such circumstances; and those few have invariably had a mild disease, more allied to chicken-pox than to small-pox; whereas *all* the severe cases, and the greater proportion of the mild ones, have occurred in adults, in whom an interval varying from ten to thirty years (the average eighteen) had elapsed since the date of vaccination.

Causes of small-pox after vaccination.—The attention of Dr. Jenner was early directed to investigate the circumstances which interfered with the protective power of cow-pox. In his first publications he adopted the notion of a true and a *spurious* cow-pox, the produce of the cow, one of which afforded protection, and the other none. When he afterwards ascertained that the true cow-pox itself could not always be depended upon, he took up the theory of *local action*, and contended that cow-pock virus originally good, might become, from a variety of causes, so deteriorated in quality as to produce a local disease, but no such constitutional influence as is necessary to ensure protection against small-pox. In the course of years a third explanatory principle was adopted, which we may designate as the doctrine of *variolous diathesis*. Other pathologists had early suggested a fourth, viz.—the decay of vaccine influence in the lapse of years.

1. *Deterioration of the vaccine virus.*—It has been repeatedly urged as one mode of accounting for the occasional occurrence of small-pox after vaccination, that the vaccine virus deteriorates

by passing through a succession of human bodies. This idea was never countenanced by Dr. Jenner, and is not generally received by medical men, at least in this country, but it is a favourite doctrine with the public. We see no grounds whatever for adopting such a notion. It has neither reason nor analogy in its favour. Those who take cow-pox naturally, or by direct inoculation from the cow, are as open as others to the chance of subsequent small-pox. Persons vaccinated by Dr. Jenner himself, in the very infancy of the practice, before such deterioration could possibly have commenced, have yet been attacked by small-pox in after life. It is contrary to the analogy of small-pox virus, which has undergone no such change, but remains as virulent as in the days of Rhazes and Avicenna. If children are successively vaccinated from each other, all of whom are from various causes ill disposed to take on the perfect disease, the virus may unquestionably degenerate, and at length wear out altogether. In tropical countries, and in confined localities, such an occurrence certainly takes place, but this is very different from the notion of a virus deteriorated by the mere influence of *time*.

2. *Imperfect vaccination.*—This was the favourite theory of Dr. Jenner, and as such alone it would deserve attention. But it has other and more legitimate claims to our consideration. Vaccination is said to be imperfect, when any considerable deviation from the ordinary course of the vaccine vesicles takes place. The impediments to perfect vaccination, according to the supporters of this theory, are principally the following:—1. Spurious matter, by which is understood, not a spurious virus as originally taken from the cow, but matter taken from the arm at an improper period of the process. 2. An insufficient number of vesicles. 3. Preoccupation of the skin by some disease in which a fluid is poured out capable of conversion into a scab, such as tetter, ringworm, scaldhead, erysipelas, or even a whitlow on the finger. 4. External violence done to the vesicle, such as rubbing or scratching it, more especially during its early stages; or robbing the vesicle incautiously of its contents, particularly where one only has come to maturity.

That these circumstances may, and do in some cases, materially interfere with the success of the vaccine process, cannot be questioned; but many strong arguments have been adduced to prove that the influence attributed to them has been overrated; [*] and that the theory itself is neither so well founded in general reasoning, nor so far justified by experience, as to afford a satisfactory explanation of the phenomena.

3. *Variolous diathesis.*—At various times, and by persons high in authority, the opinion has been put forward, that small-pox occurring after vaccination may be ascribed to some peculiarity of constitution identical with that which renders some persons liable to second attacks of small-pox. This theory is still upheld by some, and great importance has even been attached to it, as an explanation of vaccine failure. Its validity depends upon the assumption that small-pox and cow-pox are essentially the same disease, a position which we have already seen to be objectionable, even if at all tenable. The great, and, as it appears to me, unanswerable argument against it is this;—small-pox occurring a second time was so rare, that its occurrence was actually denied by three of the oldest and most experienced physicians of the last century; viz. Van Swieten, Dr. Heberden, and Dr. Monro,[†] while small-pox after cow-pox is an event of daily occurrence. One-third of the total admissions into the Small-Pox Hospital for several years past has consisted of persons who in early life have undergone vaccination. Again, during the twelve years ending December 31, 1833, the total number of cases of secondary small-pox has amounted only to fourteen. This statement, however, is not intended to convey any comparison between the preservative effects of inoculation and vaccination. The two processes are in their nature and objects so essentially different, that no fair comparison can really be made between them. The former is calculated, by ensuring one attack of small-pox, to prevent a second. The object of the latter is to prevent any attack of small-pox whatever. A person is not inoculated to prevent a second attack of small-pox, but to give a first. A comparison between the two processes, therefore, is like instituting a comparison between the relative frequency of first and second attacks of small-pox. It has been observed that, as a measure of prevention, inoculation is the most severe, but the most certain;—vaccination the most mild, but the least certain. This probably expresses the exact state of the question as to the relative value of vaccination and inoculation in the fewest words,

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[*] See Edin. Med. and Surg. Journ. vol. xvi. p. 235.

[†] See Thomson on Varioloid Diseases, Appendix, p. 8.

and in the clearest manner consistently with our present knowledge.

4. *Decadence of vaccine influence.*—There was no doctrine to which Dr. Jenner was so resolutely opposed as that of a gradual decay in vaccine influence in proportion as life advanced. His great argument against it was, that it was contrary to the analogy of small-pox inoculation, which was universally allowed to sustain no diminution of energy by the lapse of time. But here again the force of the argument depends on the presumed identity of the vaccine and variolous poisons. If this principle be not conceded, there is as much reason in supposing that the influence of vaccination may gradually subside, as that it may continue permanent through life. In such a case, experience alone, not analogy, can determine the fact.

Dr. Willan adopted without change the notions of Dr. Jenner concerning the permanency of vaccine influence when the process was complete, and many of the more recent writers on cow-pox have expressed the same opinions. The public, however, have become familiarized with the notion that the influence of cow-pox wears out in the course of years. Some have even attempted to define accurately the period during which vaccination gives this "charmed" life; and seven, ten, and fourteen years have been respectively announced as the limit of its protective power. I can see no grounds for upholding the doctrine as thus propounded, but am strongly disposed to believe that the susceptibility of small-pox does return in many cases, more especially when favoured by certain concurrent circumstances. Of these the most energetic hitherto ascertained are change of climate and the period of puberty. It is not an unreasonable supposition that the changes effected by each of these means in the constitution, loosen to a certain degree the hold which vaccination has upon the system, and thus pave the way for the inroad of small-pox. Some late experiments of Dr. Heim would tend to connect the subsequent susceptibility of small-pox simply with the development of the *adult* constitution.*

Such a doctrine will probably be conceded when it is applied only to cases of doubtful vaccination; but the question, to be met fairly, should be further extended and put thus:—Does the doctrine of a limitation in the period of vaccine security apply at all (and if it does, in what proportion), to those cases in which the primary process is complete in all its stages,—when every insertion takes effect,—when the vesicles are large, pearly, and elevated,—when the areola reaches its acme on the tenth day,—when the constitution at that period gives evidence of internal derangement,—when the scabs remain adherent to the twenty-first day,—and, lastly, when the resulting cicatrix is well-defined and permanent in after life? Years must elapse before this question can be answered beyond the possibility of doubt or cavil. In the meantime, however, we are warranted in saying that, if such limitation does apply to such cases, it is only to a small proportion of them,—in other words, that, in the present state of our knowledge, permanent security is the *law* of the animal economy, and temporary security the *exception.*

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* London Medical Gazette, vol. xiv. p. 517.

Improvements in the practice of vaccination.—Several plans have been suggested, some of them emanating from the public rather than the profession, having for their object to obviate the real or supposed imperfections of vaccination. Four different proposals have been made with this view, viz.:—Recurrence to the cow; re-vaccination; inoculation at *short* intervals from the date of vaccination; and inoculation at *distant* intervals from the date of vaccination. Each of these is occasionally practised.

1. *Recurrence to the cow.*—For many years past it has constantly been urged upon the profession in this country, as well as abroad, to revert more frequently to the cow for supplies of lymph. The proposal is certainly specious, but the following arguments appear conclusive against its general adoption. It is by no means easy to find the true cow-pox, even in a large dairy. Years often elapse before it is met with. There must always be a doubt as to the purity and genuineness of the new stock, until the experiment of variolous inoculation has been subsequently made, which parents are very seldom disposed to allow. Further, the true vaccine lymph, as first taken from the cow, is frequently very acrid, producing glandular swellings and local inflammation, and thus occasions distrust rather than increased confidence. Lastly, it is not found that cases of small-pox are more frequent in those recently vaccinated, than in those vaccinated in the infancy of the practice.

The experiment was tried in Italy upon a large scale in 1829. The result was, that there was no perceptible difference between the course of the old and the new, the primitive and the *humanised* lymph. More recent experiments in India tend to show that the measure may on some great occasions be adopted with advantage;* but it is clear even from these statements, that recurrence to the cow is not lightly to be recommended, nor adopted without great and multiplied cautions.

2. *Re-vaccination.*—The practice of re-vaccinating at distant intervals from the date of the primary process is one from which no harm and much benefit may be expected. The operation is simple and free from risk. If no effect follows, the security of the individual is rendered doubly sure. If vesicles arise, and the disease goes through all or some part of its usual course, that security may reasonably be considered as *renewed.* The only objection that can be urged against it is the difficulty of applying it on a large scale, and the fear lest the general adoption of such a remedy should serve to unhinge and disturb the public mind on the subject of the vaccine security. To its application in individual cases no reasonable objections can be offered. The practice has been carried to a very great extent in Germany since the year 1829.

3. *Inoculation at short intervals from the date of vaccination.*—Very early in the history of vaccination it was proposed to inoculate with the variolous and vaccine virus at the same time, or within such short periods, that the two influences might co-exist, the object being to produce artificially that mild form of small-pox which we now so often meet with casually, and at long periods after vaccination. The proposal was revived in 1825 by Dr. Ferguson. At first sight this measure appears to be a philosophical application of the facts and principles already adverted to, but the difficulties which oppose its introduction into practice are great, and in fact insurmountable. It proceeds upon the principle of keeping alive pure small-pox and pure cow-pox. But if the practice were to become general, pure cow-pox would soon become extinct, for the ordinary supply would be contaminated, and recurrence to the cow we have already seen to be both troublesome and precarious. Its application, therefore, at best, could be only on a very limited scale.

4. *Inoculation at distant intervals from the date of vaccination.*—The early experiments of Jenner and Woodville suffi-

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* Calcutta Medical and Physical Transactions, vol. vi. p. 177.

ciently proved that, for two or three years at least after the insertion of the vaccine virus, the human body is unsusceptible of small-pox by inoculation. These testings, however, have long ceased to be made, and very little is known experimentally as to the possibility of communicating small-pox to the vaccinated, by inoculation, at distant intervals from the date of vaccination. It cannot be doubted, that a series of experiments carefully conducted, showing the effects of small-pox inoculation upon persons vaccinated from the year 1800 to the present time, would be eminently useful. They would settle indisputably the question as to the permanency or fugitive nature of vaccine influence, and, as we believe, would strongly fortify the public mind in favour of vaccination.

Extermination of small-pox.—Dr. Jenner originally suggested the notion, which has been reiterated by Sir Gilbert Blane and others, that cow-pox possesses powers adequate to the extirpation of small-pox from the face of the earth. It is difficult, however, to understand how such an event could be brought about by the means proposed. Parents vaccinate their children to escape the dangers of small-pox. Should this disease subside, and its dangers become less known, the necessity of any precaution against it would become less apparent, and the preservative practice would ultimately fall into neglect. And so, in fact, it has always proved in small isolated communities where small-pox is seldom seen, and even in larger towns where government does not enforce vaccination under penalties. The doctrine that cow-pox possesses an exterminating power, assumes, first, that small-pox arises invariably from contagion; secondly, that the susceptibility of cow-pox is universal in mankind; and, thirdly, that the influence of vaccination is permanent through life. All these are questionable points, and therefore on physiological grounds the notion must be abandoned. Vaccination, then, we may confidently affirm, can be maintained only by having small-pox constantly before our eyes; and nothing warrants us in the expectation of banishing the bane by even the most liberal application of the antidote. Every thing, on the contrary, conspires to show, that small-pox and cow-pox must exist together, and that the history of vaccination offers no exception to that general law of our physical and moral nature by which good and evil are blended.

CHAP. V.

OF THE MEASLES.

First Appearance and early History of the Measles. Symptoms and Sequelæ of the Disease. Pneumonia. Phthisis. Cancrum oris. Anomalous Measles. Rubeola sine Catarrho. Bronchitis rubeolosa. Malignant Measles. Pathology. Period of incubation. Recurrent Measles. Inoculation. Treatment of Measles.

The measles was introduced into Europe about the same time as the small-pox, and followed in its track. For a long time it was supposed to be only a variety or modification of that disease, and as such it is described by Rhazes and the other Arabian authors. Avicenna considered measles as a sort of bilious small-pox. Diemerbroeck in 1687, and Morton in 1696, maintained the *identity* of small-pox and measles; nor was it until nearly the close of the last century that all traces of this doctrine vanished. Sydenham described accurately the measles which prevailed in London in 1670, and to his history of the disease very little has been added by more modern authors. For the few additions which have since been made, we are chiefly indebted to Dr. Watson in 1763, and to Dr. Willan in 1800. Several *species* of measles have been described by nosologists, but they are all referrible to one,—the *rubeola vulgaris* of Dr. Cullen: the other forms which measles assumes being only modifications of this, arising either from a peculiar condition of the atmosphere, or the constitution of the individual affected.

Phenomena of measles.—The measles commences with the usual symptoms of *pyrexia;* nor is it at first to be distinguished from an attack of common continued fever. The diagnosis is to be effected by a knowledge of the prevailing epidemic, and attention to those catarrhal symptoms, which are the constant concomitants of the eruptive fever of measles. The mucous membranes of the head and chest are alike affected; the tunica conjunctiva, the Schneiderian membrane, and the mucous membrane of the larynx and bronchia. The eyelids are swelled, and the eyes suffused, watery, and morbidly sensible to light; there is a copious thin secretion from the nose, with sneezing; and lastly, a dry cough, with hoarseness and some degree of dyspnœa. I have met with a case, in which severe and long-continued epistaxis accompanied the other initiatory symptoms. Besides these catarrhal symptoms, the eruptive stage of measles is marked by considerable heaviness of the head, and drowsiness, amounting in some cases almost to coma. The heat of the skin is great, the pulse frequent and hard, and the general marks of pyrexia severer than what occur in cases of common catarrh. In subjects previously healthy and favourably predisposed to receive and develope the disease, the eruption shows itself with wonderful regularity seventy-two hours (that is, on the fourth day) after the occurrence of rigor. In other words, the initiatory fever of measles assumes the quartan, while that of small-pox takes the tertian, type.

The eruption of measles first appears on the forehead, and gradually spreads over the whole body. It shows itself in the form of distinct, red, circular spots, which afterwards coalesce into patches of an irregular figure. The colour of the eruption is of a dingy red, very different from the *vivid* redness of scarlet fever. It is sensibly elevated upon the face, and often also upon the breast and back, but scarcely ever upon the extremities. Upon the first appearance of the eruption, the catarrhal symptoms and the accompanying fever sometimes subside completely, but this is by no means a frequent occurrence. Indeed they are often aggravated, so that upon the second or third day of the eruption it is not uncommon to meet with severe cough and dyspnœa, the measly catarrh merging, in fact, in acute pneumonia. The stomach too, in severe cases, is often very irritable during the first days of measles. There is vomiting of bile and excessive restlessness. On the second day the eruption on the face is most vivid, and as it declines on the face, is at its height on the extremities. In about five days it completely disappears from the whole body. A slight discolouration of the skin commonly remains for a short time, which in a few cases goes on to desquamation.

Sequelæ of measles.—The decline of the eruption is not always followed by the subsidence of the other symptoms. A considerable degree of cough, or difficulty of breathing, frequently remains, marking the continuance of that inflammatory disposition which characterizes the former stages of the disease. The pulse continues frequent, and sharp; and in scrophulous habits of body this state of disease occasionally ends in hæmoptysis, hectic fever, and genuine consumption. All the *sequelæ* of measles have an inflammatory character. Upon the decline of the eruption diarrhœa often comes on, and Sydenham was, I believe, the first to take notice that this frequently yielded to blood-letting. Among the other consequences of measles may be enumerated ophthalmia, swellings of the lymphatic glands of the neck, chronic eruptions of a porriginous character, discharges behind the ears, ulcers at the corners of the mouth (indicating a heated or inflamed state of the mucous membranes of the chest and belly), or affections of the bowels ending in mesenteric disease or marasmus. These distressing sequelæ of measles are chiefly met with in those cases where the onset was irregular (that is to say, attended with hæmorrhagy, or very long delayed), or where the *normal* progress of the disorder was otherwise seriously disturbed. Sometimes, however, inflammatory symptoms of an urgent kind will supervene when the practitioner is least prepared for them, and therefore a caution should be given to watch the patient attentively during the whole period of convalescence.

Cancrum oris.—The danger in measles principally arises from pneumonic inflammation, but in very feeble frames, and in the lowest ranks of society, where cold and poverty combine with disease in reducing the powers of life, a strong disposition frequently manifests itself to sloughy ulceration. Leech-bites and blistered surfaces degenerate into foul, and even gangrenous, ulcers. In this condition of the system the dreadful spectacle of gangrenous erosion of the cheek is sometimes witnessed. This affection, commonly called *cancrum oris*, begins in the inside of the cheek by a hard swelling. The gums ulcerate and the teeth loosen and fall out; a black spot next appears on the cheek or at the corner of the lip, which rapidly spreads, and the child dies miserably. Such a complaint sometimes accompanies the latter stages of small-pox, and infantile fever, and sometimes it occurs idiopathically, but its most frequent precursor is measles. Medicine furnishes but very imperfect means of combating it. Tonics and local stimulants are indicated, but their influence is very trifling.

Rubeola sine catarrho.—Among the irregular forms of measles may be first noticed that species of the disease, called by Dr. Willan rubeola sine catarrho. This is the spurious or bastard measles of the German authors, the rubeola incocta, or *imperfect* measles of Mason Good. It is a very rare variety, but highly interesting in a pathological point of view. It occurs both to children and adults. In children it is chiefly observed as a mild disease. The diagnosis of it is very difficult and seldom satisfactory until it has produced in another child the common measles, which experience has convinced me it is capable of doing.

Bronchitis rubeolosa.—In adults I have met with several instances of a severe disease, characterized by an eruption truly rubeolous, but without ophthalmia, hoarseness, or coryza. It is accompanied, from its very onset, with purulent expectoration, and other symptoms of intense bronchial inflammation. Several of these cases have run into low typhoid fever, and some have proved, even rapidly, fatal. The exact nature of the affection is not well understood. It is perhaps an acute bronchitis, upon which a rubeolous inflammation supervenes, and *bronchitis rubeolosa*, therefore, its legitimate denomination. I have never been able distinctly to trace it to the contagion of measles, nor have I ever known it to infect others.

Malignant measles.—The most remarkable anomaly which the history of measles presents, is its occasional occurrence in a very highly aggravated or *malignant* form; and this, not merely in individual cases, but even as an epidemic. Such a form of measles prevailed at Plymouth in 1745, in London in 1763, and at Edinburgh, from September to December, 1816.* The symptoms of the eruptive stage, in these epidemics, were unusually severe. Extreme debility quickly supervened, with restlessness, or sometimes coma, a disposition to vomiting, a dry, hard, or black tongue, and a deep red colour of the fauces, —typhoid symptoms, that is to say, with great irritability of the stomach. In these cases, too, the eruption did not exhibit its usual appearances. It frequently receded in the course of the first twenty-four hours; and when it first appeared was less elevated than usual, and of a dark and livid colour. A large proportion of these cases proved fatal; and on dissection, mucus was found collected in considerable quantity in the bronchia, with other marks of inflammation or congestion within the thorax. In the epidemic of Edinburgh in 1816, the recession of the eruption was the worst symptom; few recovering in whom this occurred. It was neither attributable to cold, nor to the too free use of cathartics. It is commonly said, that here the energy of the system does not prove sufficient to *throw out* the eruption. The more correct expression seems to be (and the phenomena of small-pox and scarlet-fever give countenance to this view of the case), that when the mucous membranes are violently attacked in the first instance, *metastasis* to the skin does not take place, which under common circumstances relieves them.

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* Consult the works of Huxham, and the Observations of Dr. Watson in the 4th vol. Med. Obs. and Enq.—See also the Ed. Med. and Surg. Journal, January, 1817.

Prognosis in measles—According to the bills of mortality the average annual deaths by this disorder in London exceed 500. From this we may deduce, that measles carry off about one-fortieth part of the whole population. Much, however, depends upon season. In mild and temperate weather the mortality is infinitely less than in the depth of an inclement winter. The crisis, or period of greatest danger, occurs about the ninth day of fever (the sixth of eruption). The worst symptoms are extreme restlessness, continued vomiting, diarrhœa, delirium and convulsions, coldness of the extremities, and profuse sweats. When measles supervenes upon hooping-cough, or any other disease implicating the lungs, or when it occurs in scrophulous or debilitated constitutions, the danger is greatly increased.

PATHOLOGY OF MEASLES.

Incubation.—The measles arises from a specific contagion, the latent period of which has been the occasion of some differences of opinion, owing chiefly to the circumstance of the initiatory catarrhal fever being viewed, or not, as constituting part of the incubative stage. The general law appears to be, that rigors appear on the eighth day after exposure to the contagion, and eruption on the eleventh. The period admits, however, of considerable extension. If the stage of incubation be (as is reasonable) considered to occupy the whole time that elapses prior to eruption, its extreme duration may be stated to be twenty-one days. During this interval the patient occasionally suffers from languor during the day, and restlessness at night. Sometimes a degree of catarrhal affection is present throughout the whole term of incubation, as well as during the three days intervening between the rigor and the eruption.

The measles prevails generally during the spring months, and often along with small-pox. The circumstances which determine the severity of the disease in particular individuals are not very well ascertained, but it is certain that in scrophulous habits, and in those of a plethoric disposition, it is principally to be dreaded.

Recurrence of measles.—De Haen, Morton, and Burserius have collected instances of secondary or recurrent measles, but the occurrence is considered more rare than that of second attacks of small-pox, and from the absence of scars there is more difficulty in ascertaining correctly the facts. Dr. Willan threw out the suggestion, that where the measles occurs without previous catarrhal symptoms, the future susceptibility of the disease is not removed; but the notion is unsupported by adequate proofs. Dr. Baillie has described* eight unequivocal instances of recurrent measles, and it is a singular circumstance that they occurred in individuals of the same family. These were truly cases of recurrent measles, there being in each a fresh application of the contagion. The intervals of the respective attacks were four months, six months, and twenty-one years. Some cases have been lately recorded of *relapse* of measley eruption without re-infection, at intervals not exceeding a fortnight. Such cases are very rare.

Inoculation of measles.—Dr. Home, of Edinburgh, informs us, that he succeeded in inoculating the measles, by applying to an incision in the skin cotton dipped in the blood of a patient labouring under the disease. He states that the eruptive fever followed in six days, that the symptoms were mild, and the lungs not affected as in the casual disease. It does not appear, however, that these observations have been verified by any later experiments, upon which reliance can be placed. It is satisfactorily ascertained that the measles delays the progress of vaccination, and of the pustule of the inoculated small-pox. Two cases, however, are recorded by Dr. Russell, of small-pox and measles running their regular course in the same individual, at the same time.†

Treatment of measles.—The treatment of measles, in its common form, must be regulated chiefly by the symptoms which mark the tendency to thoracic inflammation. It is well ascertained that these are often aggravated by a free exposure of the body to cold, either during or previous to the eruption; and some have remarked, that this aggravation of the catarrhal symptoms is occasionally attended by a *recession* of the eruption. Moderate warmth, therefore, is on all accounts advisable in measles. A very hot regimen, however, such as is sometimes pursued with the view of *forcing out* the eruption, is highly injurious. I have seen it bring on delirium, restlessness, and bleeding from the nose. It has been imagined that active purging during the early stage has contributed to repel the eruption, and thus to increase the danger of the patient. This observation I have never been able to verify. On the contrary, saline purgatives seem well adapted to diminish the inflammatory excitement which prevails throughout the whole course of the disease. In mild cases nothing further is required than promoting a gentle perspiration, and exhibiting an occasional laxative.

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* Transactions of a Society for the Improvement of Med. and Chir. Knowledge, vol. iii. pages 258, 263.

† See also "Case of the simultaneous occurrence of Small-pox and Measles," in the Med. Chir. Transactions, vol. xiii. page 163.

Where pneumonic symptoms prevail, a more vigorous practice is necessary; but a distinction is here to be made, which Dr. Willan has placed in a very clear point of view. The oppression of the respiration, and the cough which accompany the first appearance of this and of other eruptions, do not appear to depend on true inflammation, for they often go off suddenly, and they may, at any rate, generally be left to their natural termination. But it is upon the third day of the eruption, when the dyspnœa and cough become aggravated while the eruption is declining, when the cough in particular is hard, and accompanied by pain in the chest, that an active system of treatment is required. Bleeding from the arm is then indispensable, and must be repeated in proportion to the urgency of the symptoms. Even children of a tender age require in measles this evacuation, for which leeches and cupping afford but an imperfect succedaneum. Children do not bear general blood-letting well, but they bear it better in measles than in almost any other disease. The immediate danger from pneumonia, and the more distant, but not less alarming, risk of phthisis, make it advisable to check the pneumonic symptoms in the speediest and most effectual way.

Saline and demulcent medicines are useful. Opiates may be given with much advantage after bleeding and aperients, if the cough continues troublesome. The warm bath every night is decidedly useful. A blister should be applied to the chest, but not until the strength of the pulse has been considerably reduced by local or general blood-letting. Some caution is requisite in the application of blisters in the inflammatory sequelæ of measles, from the disposition they have to create sloughing and gangrenous ulcers.

When the measles assumes that malignant or typhoid form which we formerly described, recourse must be had to the warm bath, blisters, wine, and other *cordials*, such as the subcarbonate of ammonia, and the aromatic confection. Preparations of bark and serpentaria, especially the tinctura cinchonæ composita, were recommended by the older authors, but their utility is very questionable. The observations of Dr. Watson on the treatment of this form of measles are judicious, and applicable to disease in a very extended view. Theory, he says, would often dictate the loss of blood, either general or topical; but if it be resorted to under these circumstances, the patient often loses more by the debility which is brought on, than is gained by the relief afforded to the circulation within the thorax. It may be remarked indeed generally, that in all typhoid fevers it is a point of great difficulty to determine how far local congestions and inflammations are to be relieved, at the risk of reducing too much the tone and powers of the system. The malignant form of measles sometimes shows itself *sporadically*, that is to say, in individual cases, while the general character of the epidemic is inflammatory. The circumstance may generally be traced to the weakened condition of the child, the result probably of fever, hooping-cough, scrophula, or other preceding disease, depressing and exhausting the powers of life. Such cases seldom end happily, notwithstanding the most judicious practice.

Treatment of the sequelæ of measles.—Great care is required in the management of the many severe affections commonly known as the *dregs* of the measles. If, upon the decline of the disease, cough continues, and the pulse remains frequent, it will be proper to confine the patient to a very mild farinaceous or milk diet,—to give occasionally gentle aperients; such as castor oil, or rhubarb,—and to direct a saline draught, with a few drops of tincture of digitalis, to be taken every six hours; such as—

℞ Misturæ amygdalæ, ℥vij.
Potassæ nitratis, gr. vi.
Tincturæ digitalis, ♏ vi.
Syrupi tolutani, ℥i. Misce.

For infants the following formula may be recommended:—

℞ Potassæ sulphatis,
Sacchari albi, sing. ℈ij.
Pulveris jalapii, gr. viij.
——— ipecacuanhæ, gr. iv. Misce.
Divide in chartulas xij. Sumat j ter die.

In severer cases leeches should be applied to the chest, or blood may be taken from between the shoulders by cupping. Change of air contributes essentially to the recovery of persons suffering under what may be called the secondary fever of measles. The convalescence from measles does not bear the exhibition of bitter and tonic medicines, like that of many other febrile diseases.

CHAP. VI.

SCARLET FEVER.

First Notices of the Disease. Nosological Distinctions. Description of the three Varieties of Scarlatina—simplex, anginosa, maligna. Prognosis. Pathology. Principles of Treatment. Employment of Blood-letting, cold affusion, purgatives, tonics. Nature and Treatment of the Dropsy succeeding Scarlatina.

The scarlet fever is probably a disease of very modern origin. No mention of it is made by the ancient or Arabian authors, and the first time it is distinctly noticed is but little more than two hundred years ago. It has been suspected that the contagion came originally from Africa. Be this as it may, it first showed itself in a severe form in Spain in 1610, from whence it spread to Naples, where it raged epidemically in 1618, and was described under the title of the pestilential affection of the fauces, or the *putrid sore throat*. In 1689 the same disease made its appearance in London, and was described by Dr. Morton, though not with the accuracy of the first Spanish and Italian authors. In 1735 it broke out in North America, and spread gradually but slowly over that continent. One of the most curious circumstances in the history of the disease is the slowness of its diffusion.

An idea long prevailed that scarlet fever and measles were modifications of the same disorder. Morton strongly contended for their identity, and called the former *morbilli confluentes*. The diagnosis was not completely established until nearly the close of the last century.

When the scarlet fever first appeared in Europe, it was in a very malignant form; but between the years 1660 and 1670, a febrile complaint attended with scarlet eruption was observed by Sydenham in a degree so singularly mild, that nosologists have doubted its being really the same disease with that which had previously occurred. Dr. Cullen believed it was specifically different. Dr. Withering states, that in his early practice he considered scarlet fever and putrid sore throat distinct diseases, requiring distinct methods of treatment. More enlarged experience, however, compelled him to renounce that opinion; and he says, that after paying the most assiduous attention to the subject, by observing the complaint in every difference of season, exposure, age, and temperament, he was satisfied that they constitute but one species of disease;—that they owe their existence to the same specific contagion;—that the variations in their appearance depend upon contingent circumstances, and their greatest differences not greater than those of the distinct and confluent small-pox.

The scarlet fever fixes itself in an especial manner upon two structures—the skin, and the mucous membrane of the fauces, including the tonsils. In mild cases there is *efflorescence,* with little fever, and scarcely any affection of the fauces. This constitutes the scarlatina simplex. In very severe cases there is extensive ulceration of the fauces, attended with typhoid fever, but with little or no efflorescence. This is the extreme grade of the disorder, and is called cynanche, or scarlatina maligna. In the common or intermediate cases both structures are implicated. The accompanying fever is of the synochal or inflammatory type, and the disease is then denominated scarlatina anginosa. We shall describe these varieties of the disease separately.

I. SCARLATINA SIMPLEX.

This form of the disorder commences with slight febrile symptoms. The eruption appears on the second day, first about the neck and face, in the form of innumerable red points, which, in twenty-four hours, or less, cover the whole body. On the limbs, but especially about the fingers, there is a diffuse and continued efflorescence, but on the trunk of the body the rash is distributed in irregular patches. The colour of the eruption is a bright scarlet, being always most distinct about the loins and bendings of the joints. On the breast and extremities, in consequence of the great determination of blood to the miliary glands and papillæ of the skin, the surface is often rough, and there is an appearance of papillæ, or even minute vesicles, as in miliary fever. This is very liable to happen when the patient is confined in a small room and loaded with blankets. The efflorescence spreads over the surface of the mouth and fauces; and the papillæ of the tongue, which are always elongated, extend their scarlet points through a white fur, thus affording one of the simplest diagnostics of the disease. The face is often sensibly swelled about the third day. The febrile symptoms are in some cases very slight. At other times there is considerable heat of skin, restlessness, and frequency of pulse. The eruption continues about three or four days, after which a desquamation of the cuticle takes place.

II. SCARLATINA ANGINOSA.

In this, the more common form of the disease, after one or two days of fever, during which stiffness of the neck is much complained of, there occurs, together with the cutaneous efflorescence, an inflammation of the fauces, going through its progress of increase and decline along with it. Among the first symptoms of this disease is an uneasiness in the throat. The voice is thick, and deglutition difficult. The tonsils and velum palati appear red and swelled. For the most part this goes on to the formation of specks and ulcers, whose extent is proportioned to the violence of the disorder. When numerous and deep they cause an unpleasant fœtor, and the throat is clogged up with a viscid phlegm. The tongue is of a florid red colour. The mucous membrane of the nose is swelled, and pours forth an abundant acrid secretion. There is often much pain referred to the ear, with swelling of the parotid gland.

The efflorescence seldom appears before the third day. It chiefly comes out in scattered patches, always very distinct about the elbows. Frequently, too, it vanishes, and reappears partially, and at uncertain times.

The febrile symptoms in the scarlativa anginosa are usually very severe, and of a highly inflammatory character. The heat of skin is more intense in this than in any other fever of our climate. It has been known to rise as high as 110 degrees of Fahrenheit. The pulse averages 120. There is always much restlessness, languor, and oppression of the breathing. The countenance is expressive of very peculiar anxiety. The eyes are suffused. Headache is often a very urgent symptom, and occasionally a lethargic disposition may be observed.

Desquamation.—This form of scarlatina is not devoid of danger; but, under good management, it is usually subdued in the course of a week or ten days. The process of desquamation then commences, which is often accompanied by a train of symptoms meriting the title of a *secondary fever*. The skin is hot and dry, the pulse quick, the tongue foul, the urine very scanty, and the bowels costive. Abscesses form in the ear with intense pain, which not unfrequently end in permanent deafness. The eye sometimes suffers, and blindness has been known to result; but the most frequent occurrence is inflammation, and diffuse suppuration of the cellular membrane of the neck, surrounding and sometimes implicating the parotid gland. All this seems to originate in the extension of inflammatory action from the adjacent mucous membrane. In the worst cases inflammation shows itself in some internal structure, such as the pleura, the liver, or mucous membrane of the bowels, as indicated by the ulcers that form at the angle of the mouth, the diarrhœa, and discharge of offensive motions. These severe sequelæ of scarlatina are to be attributed to the great diminution, or almost total suppression, of the important function of perspiration during the process of desquamation.

Lastly, scarlet fever is succeeded in certain cases by dropsical effusion. This subject will claim hereafter a separate consideration. An extreme degree of muscular weakness occasionally attends the decline of scarlatina anginosa, without any distinct evidence of local disease. The heart sometimes participates in this constitutional debility, and the result is frequent syncope.

III. SCARLATINA MALIGNA.

The third or *malignant* form is that which the scarlet fever assumed in London in 1745, and which is so accurately described by Dr. Fothergill.* It is ushered in by rigors, attended with giddiness, acute headache, restlessness, faintness, a sense of heat and soreness of the throat, vomiting or purging. An efflorescence appears at irregular periods from the second to the fourth day, but is seldom permanent. In the throat appear dark sloughs, surrounded by a livid base, and occasioning intolerable fœtor. The parotid glands swell, and become painful to the touch. The mouth is encrusted with a black or brown fur, and a viscid phlegm clogs up the fauces, so as even to threaten suffocation. The inside of the nostrils appears of a deep red or livid colour, from which a corrosive sanies flows, excoriating the angles of the mouth and cheeks. These symptoms are often accompanied by severe diarrhœa, with hæmorrhages from the nose, mouth, and bowels. Those who escape these dangers have afterwards to struggle though the extreme weakness left by the disease, and the diarrhœa, or hectic, which often supervene. The accompanying fever is typhoid. The pulse is small, feeble, and irregular; and often, from the very commencement, there is delirium or coma.

Diagnosis.—The only disease for which scarlatina is likely to be mistaken is measles. From this it is to be distinguished by the character of the eruptive fever, the colour of the efflorescence, and the concomitant affection of the fauces. In scarlatina the eruption appears on the *second* day, in measles on the *fourth*. Measles is preceded by catarrhal symptoms; scarlatina is not. The colour of the scarlatinal eruption is the vivid red of arterial blood; that of measles is the dusky hue of venous blood. Scarlatina is accompanied by affection of the fauces; measles by cough and inflammatory action of the lungs. These criteria are sufficiently clear, and we can only wonder that the two diseases should ever have been confounded.†

Prognosis.—The prognosis in scarlet fever, when it assumes either of its more aggravated forms, inflammatory or typhoid, should always be guarded. The malignant scarlatina is a disease of such extreme danger that few survive it. Some die as early as the third or fourth day in a state of exhaustion or collapse, and of course without disorganization sufficient to account for the result. The cause of death is to be sought for in the general condition of the body (perhaps of the fluids especially) rather than in the state of the throat. Children sometimes recover after very extensive destruction of the tonsils and neighbouring structures. In other cases the sloughing in that part is so extensive as to cause death as late as the second or third week. The patient may generally be considered safe, if he passes the ninth day. The recession of the eruption is always an unfavourable symptom; but the degree of danger is to be estimated rather by the extent to which the brain and nervous system are affected, than by the state of the surface. Great weakness, faintness, delirium, subsultus tendinum, a small and rapid pulse, coldness of the extremities, and shrunk features, forbid all hope of a favourable issue. Another source of danger is to be found in the extension of inflammation to the larynx, or in the supervention, at a later period of the disease, of pleurisy, hepatitis, or coma.

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* See "Fothergill on the Ulcerous Sore Throat, 1751."

† In October, 1826, the two contagions invaded simultaneously a family where there were two children. One took the measles after scarlatina, the other took the scarlatina after measles; the character of the initiatory fever indicating in each case the nature of the disease which was to follow.

The appearances found after death in those who die of the inflammatory or malignant scarlet fever present no features of any peculiar interest.

Pathology of scarlatina.—Scarlet fever arises from a specific contagion, whose period of incubation is short, not exceeding five days at the farthest. In infancy and early manhood the susceptibility of this morbific germ is much greater than in advanced life. This disease is extremely rare after thirty years of age. Sir Gilbert Blane, indeed, observes, that he never saw a person turned of forty affected by the scarlet fever. It is not, however, in this respect upon the footing of small-pox and measles;—a disease, that is to say, which almost every one, at some period of life, passes through; for many individuals resist it, though exposed to the full influence of the contagion. But though specific contagion is the generally acknowledged, and certainly most prevalent source of scarlatina, there is yet abundant evidence that fever, attended with scarlet eruption, and possessing all the other characters of this disease, does occasionally arise from exposure to cold.

Recurrence of scarlatina.—A great controversy has taken place upon the question of secondary attacks of scarlet fever. Dr. Withering and Dr. Willan never witnessed a recurrence of the disease. It has been satisfactorily shown, however, that this does occur, and second attacks have often proved severe. Scarlet fever is commonly said to prevail chiefly in autumn, but it has been observed in all seasons of the year. The *form* which it assumes in particular cases is partly to be attributed to the character of the epidemic, partly to external circumstances, and in part, also, to the constitution of the individual affected. It has been made a question, to what causes are we to ascribe the malignity of a particular epidemic. Season is said to have some influence, the inflammatory form of scarlet fever appearing in spring and summer, and the typhoid in autumn and winter; but no stress can be laid on this, for the complaint has been observed at the same time in all its forms, in individuals of the same family. Upon the whole, we must acknowledge, that the circumstances which determine the severity of this, or indeed of any other febrile disease, have never been satisfactorily explained, and perhaps they are altogether inscrutable. It is not accurately known at what period a convalescent ceases to be capable of communicating the infection. The power of infecting appears to continue for a very considerable time; certainly for a fortnight from the decline of the efflorescence, and probably as long as any desquamation of the cuticle is going on.

Treatment of scarlet fever.—Nothing need be said regarding the treatment of the scarlatina *simplex;* but the principles which are to guide us, when the disease occurs in either of its two severer forms, require considerable attention. They have given rise to much controversy, and were certainly not satisfactorily explained till within these few years. The treatment of scarlet fever is to be regulated entirely by the character of the accompanying fever. Where inflammatory symptoms prevail, they are to be moderated; where the typhoid disposition is manifest, the system is to be supported. In a disease assuming such different forms as scarlet fever, *existing* symptoms must be the constant guide of practice.

Bloodletting.—To allay the high vascular and especially the cutaneous excitement which prevails in the early stage of the inflammatory scarlet fever, recourse must often be had to blood-letting. It is seldom that this is called for in the case of young children, but in adults of full habit of body it is sometimes indispensable. An apprehension has often been entertained of the debilitating effects of this practice in scarlet fever, which, however, may in most cases be safely disregarded. Headache, general oppression, with a full and flushed countenance, are the symptoms which most urgently call for its adoption. These should be relieved even at the risk of depressing the powers of life, for a continuance of them leads inevitably to evils at least as great. When from the low or typhoid character of the epidemic, or other sufficient cause, general bloodletting may be thought unadvisable, leeches may be applied to the temples; and they are often productive of great relief. They may also be applied with advantage to the throat, when the swelling of the tonsils is very great. Their employment in this disease requires more than ordinary caution, for in consequence of the excited state of the cuticular circulation, they often bleed very profusely. The application of lunar caustic is the readiest and most effectual means of checking the hæmorrhage thus occasioned. When the eye or the ear becomes seriously implicated, blood should be taken from the temples by cupping to the extent of six or eight ounces.

Cold affusion.—Experience has proved, that in the cold affusion we possess another means of controlling this state of disease, which, though not equally effectual, is free from the risk which sometimes attends bloodletting. We are indebted to Dr. Currie, of Liverpool, for this improvement in practice. The great heat of skin renders the free affusion of cold water grateful to the patient. The disorder prevails chiefly among children, in whom it can be applied with facility. In common cases of scarlatina there is not that degree of febrile weakness which the fatigue of a cold affusion would augment. There is no tendency to affection of the chest, as in measles, which the application of cold to the surface might aggravate. An ulcerated state of the throat forms no objection to its use. On the contrary, the cold affusion frequently checks this symptom in the most remarkable manner. The repetition of the remedy at intervals, proportioned to the urgency of the symptoms, is indispensable; it may be safely applied whenever the skin is *hot* and *dry*. It cools the skin, abates thirst, diminishes the frequency of the pulse, relieves the headache, and the languor, and disposes to sleep. Cold or tepid spunging may be substituted in cases where the cold affusion is inadmissible.

Evacuants.—Emetics have been strongly recommended throughout the *whole* course of scarlet fever; but they are not advisable, except at the very onset of the disease. Moderate purging is greatly to be preferred, and yet a prejudice against it was long entertained, probably in consequence of observing the danger of supervening diarrhœa. In the common forms of scarlatina, where high inflammatory action prevails in the throat, with a dry and burning skin, active purgatives frequently repeated, containing calomel and jalap, are quite indispensable.

Gargles of infusum rosæ are useful at an early stage to wash away the vitiated mucus; when the sloughs are separating, barley water is preferable. In severe cases a blister may be applied to the throat. In all cases it is desirable to cut the hair close; but when the determination of blood to the head is great, the head should be shaved, and kept cool by vinegar and water, or the common evaporating lotion, containing a due proportion of spirits of wine. Saline draughts are of little value in scarlet fever. The mineral acids are more serviceable, and may be given in the following form :—

℞ Acidi muriatici, ʒj.
Syrupi limonum, ℥ss.
Aquæ fontanæ, ℥vijss. Misce.
Sumat partem sextam quarta quaque hora.

Tonics.—In the malignant form of scarlet fever, treatment of any kind is of course less efficacious; but several of the measures already recommended may be had recourse to with a prospect of success. An emetic at the commencement of the disease has often proved of great service, and in some cases appears to have completely broken its force. Stimulant gargles, as of port wine, or of decoction of bark with tincture of myrrh, are of considerable use. The bowels should be cleared by gentle doses of castor oil, but severe purging is dangerous. Tonics and cordials afford here the best prospect of success. Draughts with camphor, serpentaria, and ether, may be given at first every four hours; but as the disease advances, it becomes necessary to support the patient with decoction of bark and acids, port wine, opium, and aromatics. In the severe epidemic which prevailed in the West Indies in 1787,* capsicum taken internally, and employed as a gargle, proved very serviceable.

The convalescence from this disease is always very tedious, and may sometimes be shortened by a judicious administration of bitters and cordials. At the same time it should be observed, that an excited and feverish state of the system frequently accompanies the process of desquamation, requiring the long continued use of medicines that will encourage the action of the kidneys and bowels. For this purpose a saline diuretic, with tincture of digitalis, is to be given two or three times daily, and a senna draught every morning.

SCARLATINAL DROPSY.

I have delayed to this period the description of a very remarkable phenomenon in the history of scarlet fever;—namely, the dropsy, which frequently succeeds it.† It generally takes the form of anasarca, but ascites has also been noticed. It as often succeeds the *mildest* as the severest cases. It occurs, on an average, upon the twenty-second day from the decline of the eruption, seldom earlier than the sixteenth, or later than the twenty-fifth. Dr. Tweedie relates a singular case where the dropsy did not appear till five weeks after desquamation had begun. It is preceded for several days by languor, costiveness, and sickness. These symptoms frequently continue, accompanying a quickened pulse. The urine is scanty, and often coagulates on heating. This species of dropsy sometimes proves dangerous from the occurrence of coma, but more commonly from thoracic symptoms indicating effusion in the chest.

In speculating on the nature of this affection, Dr. Wells decidedly inclines to the idea of its being inflammatory, and in this he is supported by the opinions of later pathologists. He argues, that it is not owing to debility, for it often attacks those who are strong, and passes by those who are weak; its occurrence is confined to a particular period, though great weakness may exist before and after; and lastly, it is often attended with a white tongue and a bounding pulse. In such cases the occurrence of dropsy probably depends upon the continuance of that highly excited state of the cutaneous capillaries which earlier in the disease occasions desquamation of the cuticle; but it must be admitted that its precise causes have never been clearly explained. The common method of treating this form of dropsy is by purging, squills, and digitalis, and it is for the most part successful. Many cases have lately been published, pointing out the efficacy of bleeding from the arm, where the symptoms are more urgent. I have met with several instances, however, which appeared to indicate the propriety of bleeding and purging, but which resisted both, and ultimately yielded to bark and aromatic confection. From this we may presume that the theory which ascribes the dropsy to loss of power or tone in the exhalants, has, in some cases at least, a foundation in nature.

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* Vide Medical Communications, vol. ii. page 363.

† The reader will find a classical paper on this subject, from the pen of the late Dr. Wells, in the Transactions of a Society for the Improvement of Med. and Chir. Knowledge, vol. iii. page 167.

CHAP. VII.

THE MINOR EXANTHEMATA.

Herpes. Urticaria, or Nettle-rash. Lichen, acute and chronic. Roseola. Erythema. Miliaria. Frambœsia, or the Yaws. Its Symptoms and Progress. Peculiarities of its Contagion. Principles of its Treatment.

In the present chapter I purpose to treat of those lesser febrile eruptions, which do not, under any circumstances, go to the extent of affecting life, and are chiefly interesting with reference to diagnosis. They are, Herpes, Urticaria, Lichen, Roseola, Erythema, Miliaria, and Frambœsia.

I. HERPES.

Of all the lighter varieties of cutaneous eruption complicated with fever, herpes is that which is most distinctly entitled to the character of an *exanthema*. The term herpes is appropriated to a vesicular disease, preceded by febrile languor, and other marks of constitutional disturbance, often very severe. The vesicles pass through a regular course of increase, maturation, and decline, terminating, in most cases, in about a fortnight or three weeks. Herpetic vesicles are distinguished by their occurring in distinct but irregular clusters, appearing in quick succession, being set near together, and upon an inflamed base, which extends some way beyond the margin of each cluster. The most frequent form of the disease is the herpes zoster, or *shingles*, in which the eruption appears on the abdomen, but is observed also in some cases on the extremities, or breast.

Young persons, from fifteen to twenty-five years of age, are commonly the subjects of this disease. Very little is known regarding its causes. Anxiety of mind, change of climate, and irregularities in the mode of living, are the remote causes to which it is in general attributable. It is most frequent in summer and autumn, and seems in some cases to arise from exposure to cold after violent exercise. It is always slight, seldom confining the patient to the house, or occasioning any debility. Its course cannot be shortened by internal medicine, and it does not require any external applications. In hot countries, herpetic *ringworms* (herpes circinatus) often prove both tedious and severe, but in this country they follow the usual progress. An herpetic state of the lips (termed herpes *labialis*) occasionally appears as an idiopathic affection, originating from cold and fatigue. It is then preceded for two or three days by nausea, lassitude, languor, and sometimes severe feverish symptoms. The same affection is frequently symptomatic of some internal disorder. The common purgative draught, repeated as circumstances may require, seems to comprise every thing that is really necessary in regard to the treatment of herpes. The decoction of bark is certainly useful in the severer cases, and may be given in combination with the liquor ammoniæ acetatis, if the secretions of the kidney are scanty.

II. URTICARIA.

There are several kinds of eruption attended with fever, which have occasionally been mistaken for measles and scarlatina. They are all very trifling diseases, but they deserve some attention on the score of diagnosis. One of these is the febrile urticaria, or nettle-rash, a rare disease, of which a very scanty notice will suffice. It sometimes shows itself without warning; at other times it is preceded by feverish symptoms, vomiting, and pain in the bowels, which last for twenty-four hours. The eruption appears in the form of white elevations of the cuticle, similar to those produced by the stinging of nettles, and denominated *wheals*. It is very itchy, especially during the night, or on exposing the skin to the air while undressing. It continues about a week, occasionally fading during the day. In children it is brought on by the irritation of teething, and at different ages by disordered states of the stomach and bowels. Modifications of the febrile nettle-rash are induced in particular constitutions by certain articles of food, shell-fish, almonds, or cucumbers. These cases are commonly attended with considerable disturbance of the stomach, languor, and oppression. Sometimes the accompanying fever runs high, and the heat of skin is excessive. A gentle emetic, followed by a common opening draught, will suffice to relieve many cases of urticaria; but the urgency of the febrile symptoms, and the extreme severity of the itching, demands, in other cases, the loss of ten or twelve ounces of blood from the arm. The relief which this affords is always great, and often instantaneous.

III. LICHEN.

A disease much more frequently mistaken for the genuine exanthemata is Lichen; and in some cases the diagnosis is by no means easy. The characters of the affection may be thus described. Lichenous eruption is papular, of a reddish colour inclining to purple, and exhibits, in many instances, the crescentic forms of measles. It is in clusters, and for the most part very copious about the hands and bendings of the wrist and elbow. It never advances to the formation of vesicles, but terminates by slight desquamation of the cuticle. There is considerable variety in the progress of lichenous eruption, as well as in the character and severity of the accompanying symptoms. This has led to the division of lichen into two kinds, acute and chronic.

Lichen febrilis.—On some occasions severe febrile symptoms have been observed to usher in the disease, and to attend it for four or five days. An unpleasant tingling or itching of the skin is also present, increased by the warmth of bed, and whatever else determines the blood with unusual force to the surface. It runs its course in four or five days. It is not a contagious disease. It is taken indiscriminately by those who have, and those who have not passed through measles and scarlet fever. Eruptions of a lichenous character, accompanied by fever, arise from various causes; sometimes from the heat of the atmosphere (constituting lichen tropicus, or the prickly heat of hot climates), but in this country more commonly from circumstances ill-defined or altogether unknown. The febrile lichen being wholly devoid of danger may often be left to follow its own course; but saline aperients, low diet, and a cool regimen, are plainly indicated.

Chronic lichen.—Lichenous eruptions sometimes appear without accompanying disturbance of a febrile kind. In many cases the constitution appears in no degree to sympathize. Vaccination frequently induces such a disorder. The principal source of the chronic form of lichen, however, is the venereal virus. Venereal lichen usually shows itself in greatest abundance between the shoulders. It frequently continues for a month or six weeks. This form of lichen is benefited by sarsaparilla and alterative doses of mercury.

IV. ROSEOLA.

A rash has been described by different authors as occasionally occurring in connection with febrile complaints, to which Dr. Willan has given the name of Roseola. It differs from lichen in being a mere efflorescence, of a rose colour, without papulæ. One of the most common varieties of it, is that which precedes, in many cases for one or two days, the eruption both of the *modified* and *inoculated* small-pox. Occurring under such circumstances, roseola has frequently given rise to much discordance of opinion concerning the real nature of the case. A similar eruption has been very often observed during the summer months, in persons (especially females) of irritable constitution.

V. ERYTHEMA.

Closely allied to roseola, and scarcely indeed distinguishable from it, is the eruption called by Dr. Willan Erythema. It is characterized by a nearly continuous redness of some portion of the skin, with a slight elevation of the surface, speedily subsiding, and not existing in sufficient intensity either to occasion a blister, or to produce much constitutional disturbance. By this we distinguish erythema from erysipelas. The principal species of the disorder is called erythema nodosum. The eruption is here confined to the fore part of the leg, and takes the form of large oval patches, which run parallel with the tibia, and rise into painful protuberances, much resembling nodes. The eruption subsides in ten or twelve days, but usually leaves the patient languid. Mild laxatives, followed by the mineral acids, are sufficient for its cure. It is a singular circumstance, that this variety of erythematous eruption is seldom witnessed, except in females. It occurs principally in the months of June and July, and like the other species of erythema is not contagious.

VI. MILIARIA.

The eruption termed Miliaria is invariably symptomatic. It has been met with in every form and species of fever (inflammatory, typhoid, and rheumatic) in which sweating has been accidentally excited. There is no ground for believing, with the old authors, that any fever exists having miliary eruption as its invariable attendant. Such an eruption is in the form of minute round vesicles, of the size of millet seeds (whence the name), most abundant upon the neck, breast, and back. A sense of heat and pricking in the skin precedes their appearance. They are quickly filled with a transparent lymph, which, in some instances, acquires a milky opacity. Abundant evidence exists that miliary eruptions in fevers are the result of a highly heated and perspiring state of the skin. They afford no relief to the febrile state; and as they are, for the most part, brought out by superabundant bedclothes, want of ventilation, and cordial medicines, so will their appropriate treatment consist in the adoption of a cool regimen, free ventilation, and frequent changes of linen.*

VII. FRAMBŒSIA.

Frambœsia, or the Yaws, deserves to be placed amongst the exanthemata, first, because it can be taken but once in life; and, secondly, because it is propagated by specific contagion. It differs from them, however, in having no fixed course, but wearing itself out in variable periods. It may be considered, therefore, as the link uniting the febrile exanthemata to the chronic cutaneous diseases, called porrigo, scabies, and lepra. Frambœsia is endemic in Africa and the West Indies. It prevails chiefly among negroes, but is sometimes observed in Europeans. It is preceded by a degree of constitutional disturbance, amounting, in some instances, to fever. An eruption of small pimples then follows, increasing for ten days, when pustules form. To these succeed loose irregular crusts, beneath which, foul sloughy ulcers are found, which gradually shoot out a *fungus*, resembling in size and appearance a mulberry. This, the characteristic symptom of the disease (from which it derives its name), shows itself at irregular periods, sometimes as early as one month, sometimes as late as three, from the appearance of the eruption. The disease in about eight months wears itself out. The fungus contracts and cicatrizes, without leaving any scar, except where the inflammation runs very high. The general health is but little, sometimes not at all, impaired in the progress of the complaint. It is not a disease of danger.

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* For more copious information concerning this and the preceding diseases treated of in this chapter, consult Bateman's "Practical Synopsis of Cutaneous Diseases."

The yaws arises from a specific contagion, the latent period of which is said to extend to the unusual length of seven weeks.* It may be propagated by inoculation, but the disease is not thereby rendered milder or shorter. In Africa it is usually undergone, like the measles in this country, during childhood. It is altogether beyond the reach of medicine. Like the small-pox, it must run its course, and will leave the constitution when, after completing its various stages, it removes the susceptibility to future infection. Towards its decline, it appears to be somewhat benefited by sarsaparilla, bark, and acid, and a generous diet.

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* Dr. Thomson on Frambœsia, in the Edinburgh Medical and Surgical Journal, July 1819.

CLASS III.

PHLEGMASIÆ, OR INFLAMMATORY DISEASES.

CHAP. I.

GENERAL DOCTRINE OF INFLAMMATION.

Universality of Inflammation. Symptoms of external Inflammation. Pain, Redness, Heat, Swelling. Symptoms of internal Inflammation. Pain, Disturbed function, Fever, Buffy blood. Terminations of Inflammation. Resolution, Effusion, Suppuration, Gangrene. Predisposition to Inflammation. Causes of internal Inflammation. Mechanical and Chemical Irritants. Cold. Acrimony of the circulating fluids. Morbid Poison and Contagion. Metastasis.

EVERY organ and structure of the body is liable to inflammation; and, next to fever, this is the most important subject of inquiry in the wide extent of medical science. It involves several considerations of a general nature, which it will be for the advantage of the student to begin by pointing out. There are certain phenomena, for instance, observed to attend it in its progress and decline, whatever be the organ or structure attacked. The causes of inflammatory action also are very much the same, whatever part of the body be its seat. The *symptoms*, *terminations*, and *causes*, of inflammation, therefore, constitute its fundamental doctrines, and this chapter will be devoted to their consideration. In the next I shall advert to the *varieties* of inflammation, whether occasioned by differences of cause, or function, or texture of the part affected. Some remarks on the *theory* of inflammation, and the principles of its treatment, will conclude the inquiry into the general doctrine of *acute* inflammation. Much interest, however, has lately attached to the subject of *chronic* inflammation; and it may not be foreign to our purpose to offer, in conclusion, a few remarks on that state of disease, such as may be sufficient to point out its principal pathological features.

SYMPTOMS OF EXTERNAL INFLAMMATION.

When any part of the body which is obvious to our senses becomes inflamed, such as the skin, the tonsil, or the eye, there are four alterations from the healthy state of the part which become manifest. These are pain, redness, heat, and swelling. "Notæ inflammationis," says Celsus, "sunt quatuor, rubor et tumor, cum calore, et dolore." It is not any one of these symptoms singly, but their combination, which marks the existence of inflammation. The stomach may be painful from distension. The cheek may be red from blushing. The skin may be hot from fever. The breast may be swelled from the flow of milk. To determine how far each of these symptoms is to be considered an evidence of inflammation is an object of some importance.

1. *Pain.*—A certain degree of pain attends every deviation from health. Pain arises from spasm, fatigue, distension, sympathy, irritation, and along with other symptoms it is an important criterion of *inflammation.* The pain characteristic of inflammation is increased by pressure. At first the pain attending inflammation is acute, or lancinating; afterwards it is a *throbbing* or pulsatile pain, and these varieties of pain indicate different stages in the process of inflammation. The kind and degree of pain in particular cases appears to be proportioned rather to the facility of distension in the part than to the quantity of nerves with which it is supplied.

2. *Redness.*—Increased redness of a part, if permanent, is nearly decisive of the existence of inflammation. We find it after death to have occurred equally in cases of internal inflammation. It is obviously owing to one of two causes, or perhaps to both: the enlargement of old vessels, or the growth of new ones.

3. *Heat.*—The heat of an inflamed part is proportioned to the degree of redness. It never can exceed that of the blood at the heart. It is most conspicuous, therefore, when inflammation attacks a part at the greatest distance from the centre of circulation; such as the great toe in gout, or the point of a finger in whitlow. In one form of external inflammation heat is the great source of distress, and has occasioned the disease to be named ignis sacer, or St. Anthony's *fire*. In acute inflammation of the lungs the heat of the breath is aug-

mented, but not to the extent which might have been anticipated.

4. *Swelling.*—This is an accidental symptom of inflammation, attributable to the degree of looseness in the structure and connections of the part. Generally speaking, therefore, where there is least swelling there is most pain. Some structures of the body apparently inflame without any swelling at all.

Such are the signs of external inflammation, or phologosis; but the physician has not, for the most part, the advantage which the surgeon possesses, of judging by the eye of the existence of this state of disease. The symptoms of internal inflammation are more obscure, and require more minute investigation. Its presence is judged of in two ways,—by local, and by constitutional symptoms. The local symptoms are pain, increased on pressure, and disturbance of function; the constitutional,—fever, and buffiness of blood.

SYMPTOMS OF PHLEGMASIA, OR INTERNAL INFLAMMATION.

1. *Pain.*—Internal pain is of two kinds. The one is increased by pressure, the other is relieved by pressure. The first is inflammatory or vascular pain, the second is nervous or sympathetic pain. Pain, then, as a test or character of internal inflammation, must be *increased on pressure.* This test, however, cannot be applied in all cases; as in inflammation of the brain and bronchia, where a bony or cartilaginous case defends the inflamed structure. Again, pain is not essential to constitute inflammation. Where the affection exists in an organ of very loose texture or connections, there is little or no pain felt, as in peripneumony. Cases have even been recorded, of inflamed brain and pericardium proving fatal without any such inconvenience being produced, as warranted the suspicion of inflammatory action.

2. *Disturbance of function.*—This is almost a necessary concomitant of inflammation; and wherever the function of an organ is understood, we may often judge of the extent of inflammation in it by the degree of disturbance which its function undergoes. The particular symptoms referrible to this head, are of course as various as the organ attacked. Delirium marks inflammation of the brain;—impatience of light, ophthalmia. Hoarseness, inflammation of the larynx;—dyspnœa, that of the lungs. When the kidneys are inflamed there is no secretion

of urine. There are a few, but only a few, cases on record of inflammation existing in a part without disturbing its function.

3. *Hardness of pulse.*—Fever, more or less urgent, accompanies every kind of internal inflammation. In degree it varies, from the slight febricula which attends catarrh to the highest grade of inflammatory fever, such as is witnessed in phrenitis. According to the violence or mildness of the accompanying fever, the inflammation is called either *acute*, *subacute*, or *chronic*. The leading character of inflammatory fever, that by which the treatment is chiefly regulated, is *hardness* of the pulse. The terms sharp, cordy, wiry, and incompressible, are sometimes employed to express the same condition of the arterial beat. The radial artery gives to the finger the feeling of a tense harpstring. It is hard and unyielding.

The degree of sympathetic disturbance of the system does not always bear a proportion to the importance of the organ affected, or the extent of local disease. Fever may run as high in cynanche tonsillaris, as in a severe attack of pleurisy. Frequently, too, it appears to be measured by peculiarity of constitution, rather than by intensity of local mischief. Some persons, from these data, have argued, not without an appearance of reason, that the fever accompanying local inflammation is not always a secondary affection;—that in cynanche tonsillaris, for instance, it is not the swelling of a small and insignificant gland which raises the pulse to 120; but that fever is the primary affection, which from some unknown cause induces the local inflammation.

4. *Buffiness of the blood.*—The last proof of the existence of internal inflammation is derived from the appearance of the blood drawn. All ages and countries have agreed in looking upon buffiness of the blood as a test of inflammatory action; but different ideas have been entertained as to the degree of importance which should be attached to it. Boerhaave and the followers of his school considered it as the decisive argument in favour of that *lentor* or spissitude of the blood, on which they believed inflammation to depend. Other physicians have undervalued it as a symptom of inflammation. Upon the whole, I am satisfied that buffy blood is a very important criterion of the presence of inflammation. Genuine inflammation, indeed, sometimes exists without it; and the first cup of blood may be buffy when the last is not. These and other

anomalies are interesting in a practical as well as pathological point of view, but they do not lessen the diagnostic value of buffiness of blood.

The circumstances that concur to produce a buffy appearance of the blood have been a frequent subject of investigation. It is generally considered to depend upon an *attenuated* state of the blood, by which its heavier portion, the red particles, more readily subside. Some have attributed the phenomenon to the slower coagulation of the blood; but this is obviously an insufficient explanation, for blood may coagulate slowly and not be buffy. On the other hand, it may often be predicted that blood will prove buffy from the bluish appearance which it exhibits while flowing from the arm. The slow coagulation of the blood observable in those inflammations called entonic or active, is the occasion of another phenomenon highly characteristic of inflammatory action, namely, the *cupped* appearance of blood. The student will be careful to observe that cupped blood is *always* buffy, while buffy blood frequently exhibits a flat surface, without any contraction of the coagulum. Some pathologists imagine, that the relative proportion of fibrine in the blood is augmented in a state of inflammation. Others attribute the occurrence of buffy blood merely to increased rapidity in the blood's motion; forgetting that the blood is often deeply buffed with the pulse at eighty, or even considerably below the natural standard. The subject, it must be confessed, is still involved in great obscurity, but appears to be within the legitimate grasp of scientific investigation. The influence of the heart's own action, and of the circulation through the lungs, in the development of buffiness, are points which appear to merit particular inquiry.

TERMINATIONS OF INFLAMMATION.

The progress of inflammatory action next claims attention; and here I must begin by observing, that whatever opinion may be formed regarding the *precise* condition of the blood-vessels in inflammation, it is obvious, from the general tenour of the phenomena now described, that they are loaded with an unusual proportion of blood. This is, for all practical purposes, the *essence* of inflammation; of such increased quantity of blood the vessels must be *relieved*, before they can be restored to their natural healthy condition and mode of action.

The terminations of inflammation therefore consist for the most part of the several modifications of *effusion*.

1. *Resolution*.—When an inflamed part gradually regains its healthy state without any derangement of its structure, or any *sensible* effusion from its vessels, the disease is said to terminate by *resolution*. This is invariably the object of the physician, but the surgeon may have cause to regret it, because he occasionally excites inflammation with a view of profiting by some of its subsequent stages. Resolution may happen, first, without medical aid, when the inflammation is very slight; but far more frequently it takes place when, secondly, the requisite *unloading* of the vessels has been effected by *local* or *general* blood-letting, or, in milder cases, by local cold and purging. It is a most fortunate provision of nature that such relief may be afforded by emptying vessels at a distance from the actual seat of disease. Were it not for this, every case of acute inflammation of the lungs would prove fatal. We judge of the tendency to resolution by the *gradual* giving way of the symptoms of inflammation, particularly by the diminution of pain, and by the pulse becoming *soft*.

2. *Increased secretion*.—The second termination of inflammation is an increase of the natural secretions of the part. In membranes which have an external outlet, such as the several mucous membranes, this is almost equivalent to resolution. In the shut cavities, as those of the pleura, pericardium, and peritonæum, such a termination of inflammation is more to be dreaded; but in many cases the fluid thus effused is gradually absorbed, and health ultimately restored.

3. *Hæmorrhage, dropsy, and effusion of coagulable lymph*.—The third mode by which inflammation terminates is *effusion* from the vessels of the part, either of blood or of its principal constituent parts, serum, and fibrine. The mucous membrane of the bowels, when inflamed, frequently relieves itself by a discharge of pure blood. In some cases the *serum* of the blood is effused, as in hydrocephalus and inflammation of the tunica vaginalis testis. In other cases the *coagulating lymph* of the blood is effused, forming adhesions, as in pleurisy and peritonitis. A peculiar gelatinous fluid is thrown out in rheumatism, and a saline matter in gout. The consequences of these effusions vary according to the violence of the inflammation, and the situation and structure of the part affected.

Adhesions from pleuritic inflammation are productive of little or no inconvenience; occurring in peritoneal inflammation, they sometimes lead to incurable marasmus or ileus. The effusion of serum from inflamed vessels forms a part, and a very important part, of the general pathology of *dropsy*, to which we shall hereafter have occasion to refer. When effusion takes place in the substance of the solid viscera, they become hardened, or *hepatised*, and are rendered more or less unfit for the due performance of their functions.

4. *Suppuration.*—The fourth termination of inflammation is the effusion of a new product of the blood, called *pus*, a bland fluid, of the colour and consistence of cream. When this is poured out into some cavity formed during the process of inflammation, an *abscess* is said to exist; when the purulent matter forms upon an exposed surface, *ulceration* is said to be established. This subject opens an extensive field of inquiry, in which the labours of John Hunter have been successfully exerted. He pointed out the remarkable analogy which subsists between pus and a secreted fluid, an ulcerating and a secreting surface. The symptoms by which we judge of suppuration having taken place in an internal organ are the following:—A change from the lancinating to the throbbing pain. A sensation of weight or fulness in the inflamed part. The pulse continuing frequent, but becoming soft and full. The occurrence of rigors and of night sweats,—in other words, the development of *hectic fever*.

5. *Destruction of the inflamed part.*—In the most aggravated cases of acute inflammation the part dies. This most formidable of all its terminations may be either gradual and partial, or complete. Partial destruction is called sloughing, or phagedenic ulceration; total destruction, sphacelus, gangrene, or mortification. Such a result may happen in three ways:—1. From the excessive violence of the first stage of inflammation, rendering it impossible for the vessels to restore themselves by any kind or degree of effusion. But as the tendency to gangrene often shows itself early, and without any particular violence of the first stage, it must be ascribed, *secondly*, to a *septic* tendency in the disease itself, as in the case of plague. The malignity of that contagion so overpowers the nervous system, that the vessels of the inflamed part are unable to resist the shock of the disease, and the part itself dies. 3. The

disposition to gangrene is, in many instances, independent both of the *nature* and of the *violence* of the inflammation, and is referrible simply to the weakness of the patient's habit, which is unable to oppose resistance even to a mild attack. The occurrence of gangrene is marked by—1. The sudden cessation of pain. 2. A sinking and irregular pulse. 3. A change in the expression of countenance, from that of febrile excitement to exhaustion. 4. Delirium. 5. Cold sweats.

It remains to be stated, that several of these terminations of inflammation may be going on at the same time. Thus a mucous membrane may throw out a *muco-purulent* fluid. Flakes of coagulable lymph may float in the serum which an inflamed peritonæum has thrown out. Some portions of the cellular membrane may suppurate whilst others mortify.

CAUSES OF INFLAMMATION.

Predisposition.—Inflammatory affections occur in all climates, and to all ages, temperaments, and conditions of body; and there is consequently no small difficulty in determining the true nature of the *diathesis phlogistica*, or that particular state of body in which inflammatory action is most easily lighted up. Dr. Cullen states, that the inflammatory diathesis chiefly prevails in systems of the greatest vigour. A full habit of body, a plethoric state of vessels, and *tension of fibre*, are the terms usually employed to express the state of the system, when predisposed to acute inflammation. In such habits we often meet with genuine inflammatory diseases; but the student must bear in mind that this is neither the only state of body in which they occur, nor is it even the most common. He will find, that when the constitution is *below par*, when it has been weakened by previous diseases, by low living, by anxiety of mind, or excessive bodily fatigue, continued for a long period of time, inflammation of the most acute kind is often excited, which runs as rapid a course, and is attended with symptoms as violent, as inflammation occurring in persons full of blood, and of the most robust habit.

The state of *weakness* then, of *irritability*, and of *atony*, is at least as favourable to the development of inflammation as that of *plethora* and *tension*. The intermediate state is that which affords the surest preservative against the attack, not only of inflammatory, but of every other description of disorder.

To that kind of inflammation which occurs in robust habits, the term *entonic* has been applied; *atonic* to that which takes place in a reduced state of the system. As expressive of a pathological principle, these terms are not objectionable; but in *practice* the several kinds of inflammation are to be treated on the same principles. It is with reference to prognosis, and the extent to which measures of depletion are to be pushed, that the study of the predisposition to inflammation is principally useful.

Exciting causes of inflammation.—This state of disease sometimes arises in the human frame unexpectedly, and from causes wholly unknown; but at other times we can define its sources with considerable certainty. Among the most important of the acknowledged causes of internal inflammation will be found the following:—Mechanical and chemical irritants;—Cold;—Acrimony of the blood and humours;—Morbid poison;—Contagion; and Metastasis.

1. *Mechanical and chemical irritants.*—The phrenitis of infants has been traced to blows and falls; gastritis to poison; enteritis to the presence of hardened fæces; nephritis to calculus in the kidney; ophthalmia to dust and sand; erysipelas to leech-bites, or the distension of the skin from dropsy.

2. *Cold.*—This is the most important of all the exciting causes of internal inflammation. There is scarcely any form of it which does not occasionally owe its origin to cold; and many inflammatory affections, as rheumatism and pleurisy, have no other cause of the smallest practical importance. The period of time that elapses between the application of cold and the occurrence of inflammatory symptoms is subject to great variety. In the case of sore throat, it often follows in the course of a few hours. In that of acute rheumatism, a week, or even a fortnight, has been known to elapse. Sudden atmospheric changes, whether from heat to cold, or from cold to heat, are the frequent sources of internal as well as external inflammation. The change from great cold to great heat appears to be the most prejudicial. The vessels are thereby distended to a dangerous extent. It is thus that chilblains are formed; and many of the severest cases of pneumonia arise in this way. Several circumstances concur to augment the danger of *catching cold*, the principal of which are violent exercise, and insufficient clothing.

3. *Acrimony of the fluids.*—Some forms of inflammation,

which to a superficial observer might appear to arise without any assignable cause, have their origin in a peculiar state of body, the nature of which is not always understood, but which the older physicians supposed to consist in some acrid state of the fluids or humours. This is well exemplified in the phenomena of gout, and in the inflammation of absorbent glands occurring in scrophulous children on the approach of winter. The most striking illustration of this principle, however, is to be found in the frequent occurrence of thoracic and abdominal inflammation during the progress of typhoid and malignant fevers, implicating the fluids of the body. Several forms of chronic cutaneous inflammation appear to have their origin in an acrid or unhealthy state of the blood. This has been called the *scorbutic acrimony*.

4. *Morbid poison.*—The existence of a morbid poison in the system is a frequent occasion of internal inflammation. This principle was illustrated in the phenomena of the plague, small-pox, measles, and the other exanthemata. It is equally exemplified in those of secondary syphilis, where inflammation of the fauces, iris, and joints, is obviously attributable to such a source. The bite of the rattlesnake excites a peculiar kind of inflammation in the cellular membrane. Anatomists frequently suffer from the absorption of matter formed in the course of disease, especially of *acute* disease, such as peritonitis. In irritable habits this induces not merely inflammation of the glands and cellular membrane, but also of internal structures, often of the most acute and dangerous kind. Closely allied to this is the important but well-ascertained fact of the origin of many inflammatory affections from *contagion*. Two species of Cynanche are contagious (parotidæa and maligna). There is a contagious form of Ophthalmia. Erysipelas is contagious under certain circumstances. So, in all probability, is Dysentery. There is reason to suspect that one of the forms of peritonæal inflammation (the peritonitis puerperarum) is occasionally propagated in the same way.

5. *Metastasis.*—The last cause of internal inflammation which it will be necessary to notice is *metastasis*, or the translation of inflammation from one organ or structure to another. This is a very curious but obscure point in pathology. It is exemplified in the ophthalmia which succeeds gonorrhœa; in the inflammation of the testicle which succeeds the mumps; in

the inflammation of the pericardium which succeeds rheumatism; in the inflammation of the brain which succeeds erysipelas of the face. In what manner the metastasis is effected has never yet been developed. It appears, however, that something may be referred to *sympathy from similarity of structure*, for in most cases of metastasis it will be found that the structures primarily and secondarily affected have an affinity to each other.

CHAP. II.

GENERAL DOCTRINE OF INFLAMMATION (CONTINUED).

Varieties of Inflammation. From the situation and function of the part affected. From differences of Texture. By whom first investigated. Inflammation of Cellular Membrane and Parenchyma. Of Serous Membrane. Of Mucous Membrane. Of the Skin. Of Fibrous Membrane. Varieties of Inflammation from differences of Cause. Prognosis. Theories of Inflammation. Treatment of Inflammation. Superiority of Blood-letting. Treatment in the states of Suppuration and Gangrene; during the period of Convalescence.

THE study of the varieties of internal inflammation is no less important, in a practical as well as pathological point of view, than that of the great features of *resemblance* which all inflammations bear. Some of these have been long known to, and amply described by, medical writers. Others have only attracted attention in the course of the last twenty or thirty years, and are not yet described with all the accuracy of which the subject is susceptible, and which, from its immediate application to practice, it deserves. The specific distinctions among inflammations may be reduced to the three following:—1. The situation and function of the part inflamed. 2. The structure of the part inflamed. 3. The exciting cause.

1. The first source of variety in inflammatory affections is the situation and *function* of the organ inflamed. This is an obvious practical distinction; and it was accordingly noticed by all the oldest writers on physic. It is but of small importance, however, in a pathological view; for an organ is composed of different parts or textures, and each of these is liable to an inflammation which exhibits some peculiarities. Though on

common occasions, therefore, it is sufficient to speak of inflammation of the eye, or of the lungs, or of the bowels, yet in a scientific inquiry, it is necessary to be more precise, and to speak of inflammation of the conjunctiva, or of the iris, or of the tarsi; or to mark a distinction in the other cases by the terms, pleurisy and peripneumony; inflammation of the peritonæum, or of the mucous membrane of the intestines.

2. The second, and by far the most important of all the sources of distinction among inflammations, is to be found in the *structure* of the part inflamed. Every part of an animal body, the cuticle and hair excepted, is subject to inflammation, and according to its structure, is inflammation occurring in it modified both in symptoms and termination. It is an important and well-ascertained fact, that inflammation, in by far the larger proportion of cases, is confined to one texture; that it spreads along that one, without affecting other contiguous textures; and that almost all extensions of it from one tissue to another are to be viewed as casual exceptions to a general law. For a long time this subject was either altogether overlooked, or but very slightly attended to by pathologists. Dr. Carmichael Smyth has unquestionably the merit of being the first who thought deeply and wrote expressly upon it.* The views which he took of this great question are highly ingenious, extensive, and accurate. Subsequent observation, indeed, has corrected some and enlarged others; but, upon the whole, they may be considered as constituting the basis of all our reasonings concerning the varieties of inflammation. John Hunter and Bichat pursued the same track of inquiry. It was the fault of the latter author that he perhaps *refined* rather too much upon it.

Physiologists reduce the fundamental textures of the body to five:—*viz.*, cellular membrane, serous membrane, mucous membrane, skin, and fibrous membrane; and, accordingly, there are five varieties of inflammation founded on peculiarity of structure:—*viz.*, phlegmonous, serous, mucous, erysipelatous, and rheumatic. A very brief sketch of the distinguishing characters of each of these forms of inflammation is all that is consistent with the plan of this work.

1. *Phlegmonous inflammation.*—That texture of the body which is the most generally diffused is cellular membrane, under which head physiologists include, not merely the membrane

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* Vide "Medical Communications," vol. ii. p. 168. London, 1788.

strictly so called, but the parenchyma of the different solid viscera and glands, which consist of cellular membrane connecting a congeries of minute blood-vessels and nerves. The inflammation of cellular membrane is called phlegmonous or *common* inflammation, and its peculiarities are probably referrible to the lax texture of the part, and the size of its arteries. Phlegmonous inflammation is distinguished by the great swelling which attends it, by its throbbing pain, and by its tendency to circumscribe itself and ultimately to form *abscess*. The process by which phlegmonous inflammation is circumscribed appears to consist in the effusion of coagulable lymph, uniting the cells together, and becoming afterwards the walls of the abscess. To this order of inflammations belong peripneumony, cynanche parotidæa, nephritis, hepatitis, and some others. Phlegmonous inflammation which terminates by sloughing is called *carbuncle*.

In particular habits of body, and under circumstances not always well understood, cellular membrane inflames without showing any disposition to circumscribe itself. This constitutes what has been called *diffuse cellular inflammation*, which has lately attracted much attention from pathological writers.* It occurs principally in debilitated states of body, or from some unusual *malignity* in the exciting cause.

2. *Serous inflammation.*—Serous or diaphanous membranes are distinguished by their transparency, their firm and close texture, and by their function—the secretion of a serous fluid. The great serous membranes of the body are the tunica arachnoides, the pleura, and peritonæum. Though possessed of little sensibility in the healthy state, these membranes are the seat of acute pain when inflamed. Lancinating pain, therefore, is the first character of *serous inflammation*. It is attended by a *hard* and *wiry* pulse, and a remarkable whiteness of the tongue, but for the most part without corresponding febrile debility. The peculiar terminations of this variety of inflammation are, the exudation of coagulable lymph forming preternatural adhesions,—the effusion of serum into the cavities lined by the membranes, forming dropsy;—and occasionally the secretion of pus. It was at one time a matter of doubt whether pus could be formed, except by the sides of an abscess, or by an ulcerated surface; but it is now well understood, that both

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* See a valuable paper, by Dr. Duncan, in the first volume of the Transactions of the Medico-Chirurgical Society of Edinburgh.

serous and mucous membranes in a state of inflammation occasionally throw out true purulent matter.

3. *Mucous inflammation.*—The mucous membranes are those which line the various passages and cavities of the body which have an external outlet. They secrete a mucus for the protection of their surfaces from the air, or the acrimony of the fluids which may come in contact with them. Their surface is *villous*, and interspersed with the orifices of glandular follicles. There are three great tracts of mucous membrane,—those, *viz.* of the nose, larynx, and bronchia—of the mouth, stomach, and intestines—of the bladder, urethra, and vagina.

When a mucous membrane inflames, its natural secretion either ceases, or becomes depraved, appearing thin, acrid, *puriform*, or even purulent. It acquires an increase of irritability; but the pain which is present is slight in comparison with that experienced from the inflammation of a serous membrane. The accompanying fever is, in like manner, seldom of so acute a kind, but it is sometimes attended with a remarkable degree of *debility*, which continues through a protracted period of convalescence. In respect of termination, a curious difference exists in the different tracts of mucous membrane, attributable probably to some peculiarity in their anatomical structure. The intestinal tract is remarkably prone to ulceration, and the rapidity with which it runs into this state is worthy of note. The membrane lining the trachea throws out, during inflammation, coagulable lymph; that of the urethra, pus. These and other characters of *mucous inflammation* we shall afterwards illustrate more fully, when treating of ophthalmia, catarrh, bronchitis, and dysentery.

4. *Erysipelatous inflammation.*—Closely allied to a mucous membrane, in point of texture and function, is the skin; and the inflammation of this structure is attended with some interesting peculiarities. The phenomena of small-pox prove that the skin is susceptible of phlegmonous inflammation; but the genuine inflammation of the skin has peculiar characters, which have acquired for it the name of erythematous, or more properly of *erysipelatous* inflammation. It is characterized, like phlegmon, by pain, heat, tension, and redness; but instead of a tendency to circumscribe itself, its disposition is to spread; instead of abscess, it goes on to the formation of *vesicle;* and it occurs, much more frequently than other kinds of inflamma-

tion, in weak, irritable, relaxed, and exhausted states of constitution.

The membrane lining the mouth and fauces being covered by a cuticle may be considered as a continuation of the skin. It is equally susceptible of erysipelatous inflammation, leading, especially in children, to the formation of those vesicles known by the name of *aphthæ*. The inflammation produced by blisters, burns, and scalds, and the areolæ of small-pox and cow-pox, are instances of erysipelatous inflammation; closely allied to which also are the eruptions of measles and scarlet fever. The true seat of the redness in all these cases is the vascular net-work called *rete mucosum*, the vessels of which in the healthy state do not carry red blood. In the facial capillary system, however, the disposition of these vessels to receive red blood is very great, as is manifest in the case of blushing. On this principle we account for the fact, that the exanthematous eruptions begin about the face and neck; that erysipelas is so much more common and dangerous in the face than in any other part; and that small-pox is most liable to become *confluent* on the face.

5. *Rheumatic inflammation.*—The last structure which demands attention is that of *fibrous* membranes, or tissues, whose physiological relations were first investigated by Bichat. It must be admitted, that in this arrangement there is some mixture of hypothesis, but still there appears to be a foundation for it in nature. Fibrous membranes have a dense structure, and they do not exhale. Their use is to form a covering for more important parts. They are to the animal body what the bark is to the vegetable—parts of little sensibility, fitted to bear and to resist pressure. The principal external structures comprised under this head, are, the periosteum, tendinous and aponeurotic expansions, capsular ligaments, the tunica sclerotica, the neurilema, or envelope of the nerves, and the investing membrane of the teeth. Three *internal* structures are considered as belonging to this order—the dura mater, the pericardium, and the diaphragm.

Inflammation of these tissues or structures is commonly called arthritic, or rheumatic inflammation, the peculiarities of which have long been recognised. It differs from common inflammation in several points. 1. It never terminates in abscess, or adhesion, or gangrene, though the local symptoms be ever so severe; but it is followed by gelatinous exudation, or earthy, or saline depositions about the sheaths of tendons, and the ends of bones, impeding motion in the parts. 2. It is generally slower in its progress than the inflammation of other structures. 3. It has a remarkable tendency to sudden shiftings, or metastases. 4. The accompanying fever is seldom attended with delirium, or other marks of affection of the brain. 5. It rarely proves fatal.

Such are the chief structures of the body, and such the respective characters of the inflammation which attacks them. It remains to be stated, that the *exciting causes* of inflammation exert a considerable influence over the character of the disease. Thus inflammation of the tunica conjunctiva exhibits different appearances, according as it originates from cold, or from contagion. Inflammation of the tonsils has a different aspect when it arises from the presence of the venereal virus in the system, from that which it assumes when it is owing to cold, or the contagion of scarlatina. The practitioner of experience can indeed often ascertain the cause, by observing the *appearances* of the disease.

Prognosis in inflammation.—In forming an estimate of the degree of danger in any case of internal inflammation, the student will keep three circumstances chiefly in view:—1. The nature of the organ attacked. 2. The strength of the patient's constitution; and, 3. The length of previous illness. Inflammations which arise suddenly and unexpectedly, occur for the most part in structures not essential to life, and are comparatively of little danger. Of this kind are inflammations of the pleura, of the tonsils, of the joints, and of the testicle. On the other hand, all those inflammations which are preceded by a long course of previous languor and ill health, occur in organs which are essentially necessary to life—such as the larynx, the pericardium, the bowels, or the brain; and these are attended with the utmost danger. Attention therefore to the previous history of the patient is an indispensable step towards forming a just notion of the degree of danger, as well as of the necessity that may exist for prompt and active remedies.

THEORY OF INFLAMMATION.

Many theories of inflammation have been proposed; many attempts, that is to say, have been made to explain the precise nature of inflammatory action. But inflammation is an action peculiar to life. It is on a par with secretion and absorption;

and if we cannot unfold the nature of the healthy vital actions, it is not surprising that pathologists have failed in explaining those which occur in disease. It is pretty well agreed, that inflammation is a morbid action of capillary vessels. This portion of the great circulating system appears to act a very important part in almost all the operations of the animal body. The capillaries are the organs mainly concerned in secretion and the growth of parts, and possibly also in absorption; but the whole subject of the functions of the capillary system is exceedingly obscure. Bichat appears to have considered it as altogether beyond our reach.

Uninfluenced by these considerations, modern pathologists have attempted to define accurately the state of the capillary vessels during inflammation. All are agreed, that under such circumstances the blood-vessels of the part carry an unusual proportion of blood; but some attach to this, the notion of an *increased* action of their coats; others imagine that, superadded to the mere distension of the capillary vessels, there is spasmodic constriction either in the larger arterial branches, or in the neighbouring venous trunks; while a third class of pathologists maintain, that during inflammation there is congestion with *diminished* action of vessels and *languid* circulation. Into the merits of these different theories I have no intention to enter, after the opinion which I have expressed as to the almost impenetrable obscurity of the subject. The theory of *increased action* of the capillaries is, upon the whole, that which is likely to prove the most useful guide in practice. The great difficulty attaching to it, is how to distinguish general feverish excitement from the *inflammatory* action of vessels. Fully sensible of this and the other objections to which it is open, I shall nevertheless adopt the explanation whenever the nature of the subject may lead to theoretical discussions.

TREATMENT OF INFLAMMATION.

The general principles of treatment in inflammation admit of being laid down with some accuracy; but they are of course varied by many circumstances, among which the most important are, the period or stage of the disease; the habit of body; the exciting cause; and the structure of the part inflamed.

1. The indications of cure in the early periods of internal inflammation, are, first, to unload the vessels; secondly, to

saline depositions about the [illegible] s action; thirdly,
of bones, impeding mot[illegible] [illegible]; and, fourthly,
slower in its progress than [illegible] condition of the blood.
3. It has a remarkable te[illegible] [illegible] the nicely-regulated
tases. 4. The accompa[illegible] [illegible] local; by purgatives;
delirium, or other marks [illegible] [illegible] occasionally by warm
proves fatal.

Such are the [illegible] [illegible], such as nitre; by anti-
respective charac[illegible] [illegible]), and opium; by colchicum
It remains to [illegible] [illegible] nisters; in some cases by sti-
tion exert a [illegible] [illegible] by careful attention to diet and
disease. T[illegible] [illegible] particular means best adapted to
different app[illegible] [illegible] affections of the body, will be a
from con[illegible] [illegible] hereafter. Two of them, from their
aspect [illegible] [illegible] universal application, require
the [illegible] [illegible] are, blood-letting and mercury.
cold [illegible] [illegible] infinite superiority of blood-letting to
ric[illegible] [illegible] inflammation, has been acknow-
a[illegible] [illegible] other things may and do assist; but it is
[illegible] the vessels, by means the most direct, that
[illegible] looks for the certain and speedy
[illegible] inflammation. The attempts that have
[illegible] various times to supersede the employment of
[illegible] have signally failed, and it is still, and always
[illegible] sheet-anchor of the physician. The kind of
[illegible]—whether from the system or from the part in-
[illegible] the extent to which it should be carried, and the fre-
[illegible] its repetition, depend upon a variety of circumstances,
[illegible] which the utmost skill is required.

[illegible]—The only drug which can be considered as pos-
[illegible] any claim to the title of an antiphlogistic, that is, any
[illegible] power of controlling inflammatory action, is Mercury.
The mercurial influence excites the vessels to more healthy
action. The form in which it is usually administered for this
purpose is calomel, and to prevent its running off by the
bowels, we generally unite with it a small proportion of opium.
The power of calomel and opium in arresting the deposition of
coagulable lymph, and generally in checking the course of
inflammatory disorganization, is strikingly displayed in Iritis,
Pneumonia, and Pericarditis. To obtain this desirable result
it is not necessary that salivation should be excited. Every
useful purpose is gained by merely continuing the employment

of the drug so as to produce that tenderness of gum and coppery taste of the mouth, which are characteristic of mercurial influence.

When suppuration is established, moderate evacuations may sometimes be proper, and even rendered necessary, by the urgency of a particular symptom; but the mischief being now done, the object of the practitioner is rather to support the strength of the patient, than to risk, by further depletion, his ultimate exhaustion. A nourishing diet, therefore, and tonic medicines will often be requisite, in conjunction with such means as diminish local action, and lessen the quantity of purulent secretion. Internal gangrene being so rarely an object of treatment by the physician, it is only necessary to remark in this place, that it requires the exhibition of wine and other cordials. For the treatment of external gangrene, and for the treatment of external inflammation generally, I must refer to works on surgery, where this subject is fully treated, it being the most important of all those which occupy the attention of the surgeon.

2. The treatment of internal inflammation is to be regulated, in some degree, by a consideration of the habit of body in which it occurs. *Entonic* inflammation demands blood-letting from the general system, full purging, and active measures of depletion. Inflammation occurring in *weakened* habits is, in many cases, more effectually relieved by the *local* abstraction of blood, by blisters, and such other means as lessen the action of the vessels, without impairing that strength of the general system which is so indispensable for the repair of injury.

3. The treatment of internal inflammation is modified in the third place by the nature of the exciting cause. Scrophulous inflammation of the absorbent glands, and inflammation of the periosteum or fauces from the venereal virus, require a peculiar treatment, adapted to the circumstances of each case. Tonics in the one, and mercury in the other, must be superadded to the general system of management already adverted to.

4. To a certain degree, the structure of the part inflamed affects the treatment. Inflammation of a serous membrane demands the copious and rapid abstraction of blood. That of mucoùs membrane does not bear the same extent of evacuation, nor does it so often require it. Erysipelatous inflammation is often successfully treated by bark and acids. Rheumatic

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CHAP. III.

CHRONIC INFLAMMATION.

Structures affected by Chronic Inflammation. Chronic ation, primary and secondary. Symptoms and Causes of nflammation. Its effects. Thickening of Structure, Tumours, and Tubercle. Chronic Suppuration. Pre- and Treatment of Chronic Inflammation.

The subject of chronic inflammation is very obscure; but with the view of attracting the attention, rather than satisfying the inquiries of the student, I have thought it advisable to point out briefly the principal pathological doctrines which it embraces.

Sect. Chronic inflammation occurs frequently, and in almost every variety of structure: in the lungs (where it lays the foundation of consumption), in the brain, liver, spleen, and kidney. All the serous and mucous membranes of the body are subject to it; and in many cases this proves a most formidable [illegible]tion, as in chronic dysentery, and catarrhus senilis.

The substance of muscle, and the different species of fibrous membrane, appear to be the seat of chronic inflammation in some forms of rheumatism. The skin is considered by many eminent pathologists to be affected by chronic inflammation in lepra and psoriasis. Gleet, inflammation of the prostate gland, scrophulous enlargements of absorbent glands, strumous ophthalmia, and ozæna, are also familiar instances of chronic inflammation.

Symptoms.—Chronic inflammation is both a primary and secondary affection; that is to say, it sometimes succeeds acute inflammation, as in gleet and dysentery; or it begins imperceptibly, its advances being slow, often exceedingly insidious, and unaccompanied by any symptoms which could betray, even to the experienced practitioner, the existence of such a disease. Nowhere is this better exemplified than in chronic peritonitis; but the same thing has been observed also in cases of chronic inflammation of the membranes of the brain, and even of the heart itself. In these instances, not only are there wanting all local symptoms of inflammatory action, but there are not even any constitutional symptoms; at least none of sufficient importance to attract attention. This, however, is rare; and chronic inflammation, both primary and secondary, exhibits for the most part, local and constitutional symptoms, less indeed in degree, but the same in kind, with those which accompany acute inflammation. These vary, of course, with the part affected. Sometimes (as in chronic laryngitis) there are local symptoms, but no sensible affection of the constitution.

When the general system is implicated, the symptoms are usually those of fever. There is a quickened pulse, a white tongue, thirst, and some degree of restlessness. Occasionally, however, in a state of chronic inflammation, the tongue is clean, there is no thirst, the pulse is feeble and languid, the extremities are cold, and the slightest exertion occasions fatigue, general uneasiness, and pain across the loins. All these symptoms mark a state, not of fever, but of atony and debility. The term *asthenia* has been applied with much propriety, by some pathologists, to express this state of the general system. Many of the protracted cases of bronchial inflammation, particularly those which occur in old people, exhibit, in the greatest perfection, the characters of *asthenic inflammation.*

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and come better under discussion hereafter, when
pulmonary consumption.

effect of chronic inflammation which I shall notice
ion, and it is one of those which we have most

occasion to witness in practice. The fact of the for- urulent matter in cysts and other structures, without of previous inflammation, was well known to r, who had particular views of his own regarding they are very unsatisfactory; and until further light rown upon the subject, it may not be improper to consider these collections of matter as the result of chronic inflammation.

Treatment.—The treatment of chronic inflammation is very little understood. It would appear, however, to be almost as much out of the control of medicine as acute inflammation is under it. Nature sometimes works a cure; but in many cases, more particularly of primary chronic inflammation, nothing is found effectual in checking the disease. The general system of treatment must depend upon the state of the constitution. Four plans of treatment have been advised, and each has been found serviceable under different circumstances.

1. Where fever is present, blood-letting, purging, and saline medicines, with a low diet, are to be recommended.

2. Where the pulse is feeble, and there is a decided loss of tone in the system, myrrh, benzoin, the balsam of copaiba, steel, and bark, are unquestionably useful.

3. Where the disease is purely local, it is best treated by leeches, blisters, and issues, upon the principle of counter-irritation.

4. Where these means fail, an *alterative* plan of treatment may be resorted to. This is done under the idea of giving a new action to the vessels. Upon this principle mercury is employed in the treatment of chronic hepatitis, pericarditis, laryngitis, and generally in all the chronic inflammations of important organs; alkalies in the scrophulous inflammation of absorbent glands; and sarsaparilla and guiacum in chronic rheumatism.

To some, the subjects which have now been discussed may appear too indefinite and obscure to be legitimate objects of investigation, particularly in an elementary work. To this I would reply, in the energetic language of Bichat,* "that in explaining the animal œconomy, it is doing much to indicate analogies; to show the uniformity of an unknown phenomenon with another about which all the world are agreed. In his author, “it would be well appreciated—that nature, of results; that a small num- preside over a multitude of effects, those about which we are doubtful principles with others which appear

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* Traité des Membranes, page 189.

CHAP. IV.

PHRENITIS AND HYDROCEPHALUS.

Phrenitis of Adults. Chronic Phrenitis. Softening Delirium Tremens. Its Symptoms, Nature, and First Notices of Hydrocephalus, or Infantile Phrenitis. Stages described. Variety in the Symptoms. Duration Disease. Prognosis. Diagnosis. Appearances on Dis- Pathology. Treatment. Of the Chronic and Congenital phalus.

PHRENITIS, or idiopathic inflammation of the brain or its membranes, is a disease so singularly modified in its principal features by the circumstance of age, as to require that it should be considered separately as it occurs in adults and in children. The distinction between *phrenzy* and *water in the head* is acknowledged by sound pathology as well as by the world at large; but the former teaches that the two diseases run into each other by insensible degrees, and that the generic term phrenitis is strictly applicable to both. The former is an acute, the latter a subacute inflammation.

ACUTE PHRENITIS.

The acute idiopathic inflammation of the brain in adults first engages our attention. This formidable disease is characterized by the following symptoms: violent inflammatory fever, redness of the eyes and face, intolerance of light and sound, strongly contracted pupils, headache, extreme restlessness, and, above all, early and fierce delirium. A disposition to *self-injury* may be remarked as a peculiar feature in the character of phrenitic delirium. The patient obstinately shuts his teeth, and refuses both sustenance and medicine. If a penknife or razor be at hand, he frequently, and often too successfully, attempts his own life. Phrenitis runs its course very rapidly, and, unless promptly and vigorously treated, proves, in a large proportion of cases, fatal.

Acute phrenitis has for its predisposing cause a plethoric habit of body. In hot countries, where it chiefly prevails, it has frequently been traced to excessive fatigue, under exposure to the rays of a vertical sun. In this country it is occasionally observed originating in anxiety of mind, or from the inordinate use of spirituous liquors. Genuine phrenitic inflammation occurs too as a consequence of erysipelas of the face, and of small-pox; but, upon the whole, it is much more commonly the result of fractures of the cranium and other violent external injuries; and comes, therefore, more within the province of the surgeon than of the physician.

The acute phrenitis of adults may commence in any of the textures within the cranium. Some pathologists have recently attempted to distinguish, by the peculiar train of symptoms during life, the structure principally implicated, but I believe without sufficient grounds. Various morbid appearances have been noticed after death, of which the following are the most important. When the dura mater is inflamed, effusion of coagulable lymph sometimes takes place, and adhesions form. At other times pus is found covering a portion of the membrane; or the membrane itself is eroded by ulceration; but this latter occurrence is by no means frequent. Inflammation of the pia mater, when it runs high, generally proceeds to suppuration:—that of the arachnoid membrane to thickening of its structure, and serous effusion. Inflammation of the substance of the brain seldom extends over any large portion of that viscus. Its usual termination is in abscess.*

The treatment of genuine phrenitic inflammation is to be conducted on the common principles; but the measures of depletion must be proportioned to the violence of the symptoms, and the importance of the organ attacked. Twenty ounces of blood should be taken from the arm in a full stream, and repeated as circumstances may require; or the temporal artery may be opened, which in this violent disorder is occasionally very serviceable. Local bleeding by leeches and cupping-glasses will contribute to relieve the overloaded vessels. The purgatives should be of the most active kind, such as calomel and jalap in adequate doses; or the strong cathartic mixture: viz.

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* See Dr. Hooper's "Morbid Anatomy of the Human Brain." The effects of phrenitic inflammation are there exquisitely delineated in a series of coloured engravings.

℞. Infusi sennæ comp. ℥v.
Potassæ tartratis, ℥j.
Tincturæ jalapæ,
———— sennæ, *sing.* ʒiij.
Syrupi rhamni, ʒij. Misce.
Sumat partem quartam, quarta qq. hora donec alvus plene soluta sit.

The head should be shaved and kept cool by ice, ice-cold water, or the common evaporating lotion:

℞. Liquoris ammoniæ acetatis, ℥iij.
Spiritus vini rectificati, ℥ij.
Aquæ fontanæ, ℥vij. Misce.
Fiat lotio.

The strictest quiet is to be enjoined, and the patient closely and uninterruptedly watched.

CHRONIC PHRENITIS.

Chronic inflammation of the substance of the brain occurs, in some cases, as a consequence of falls and blows on the head, but in most instances its origin is altogether inscrutable. It generally terminates in abscess. The symptoms which it occasions are singularly diversified, and the skill of the experienced practitioner is often baffled in attempts to determine its existence. Death is usually preceded by a short period of coma. Could the nature of the disease be ascertained during life, a seton in the neck and regular purging would afford the only legitimate hope of relief.

SOFTENING OF THE BRAIN.

This very singular state of disease in the brain, usually the effect of an acute or subacute inflammation of its substance, has lately excited much attention among the pathologists of France. The peculiar symptom by which it may be recognized during life, is the co-existence of palsy with spasm, or rigidity of the flexor muscles of the extremities, and occasionally also of the muscles of the face and eyes. The state of muscular contraction sometimes precedes, but more commonly accompanies, the palsy. One side of the body may be palsied, the other rigid, contracted, or convulsed. In some instances, the rigidity extends to the paralytic limb. These, and other varieties, depend on the extent to which inflammatory action co-exists with the state of softening, and their concurrence in the same hemisphere of the brain. This state of disease admits of no relief from medicine.

DELIRIUM TREMENS.

The very singular affection of the brain and nervous system so called deserves notice in this place, from the risk which exists of confounding it with true phrenitis. It has for its pathognomonic symptoms, delirium (sometimes fierce, but more generally restrainable), delusions of sight, trembling of the hands or whole frame, frequent startings, violent agitation, and complete sleeplessness. Fever is here seldom strongly developed, and the pulse wants the character of true inflammation. A like combination of symptoms, with the addition of damp perspirations, sometimes occurs in the latter stages of fever. Under all circumstances, delirium tremens indicates extreme danger.

It arises in a large proportion of cases from the excessive use of ardent spirits; but a few instances have been traced to other sources, such as the poison of lead, the habitual use of opium, and strong mental emotion. It appears to have for its proximate cause a peculiarly excited state of the nervous system; but the occurrence of such symptoms in cases of extreme inanition would lead to the belief that *exhaustion of nervous power* expresses perhaps more accurately its intimate nature. Delirium tremens usually runs its course in about four or five days. It sometimes terminates in a fatal epileptic fit; and in hot countries, at the height of the disease, a disposition is often evinced to commit suicide. The favourable crisis is natural sleep.

It is universally admitted, that this complaint does not admit of depletion by general blood-letting. Much mischief, indeed, has followed its employment. Leeches, however, are occasionally useful, and sometimes in its early stage indispensable. The principal aim of the physician should be to calm and support the nervous system, and, if possible, to procure sleep. Opium answers all these indications, and must be given in full and frequently repeated doses. Where the complaint can be traced distinctly to the excessive use of ardent spirits, the accustomed stimulus must not be too rapidly withdrawn. Wine or brandy, in moderate quantities, should be administered.

Ether, ammonia, camphor, and hyoscyamus, have also been found beneficial. It is unnecessary to add, that moderate purging should also be directed, for in so disordered a state of the nervous system the secretions can scarcely fail to be greatly vitiated.

HYDROCEPHALUS.

Different opinions have been entertained of the nature of this complaint. Dr. Cullen considered it as a nervous affection, allied to apoplexy, and called it apoplexia hydrocephalica. Some have viewed it as more nearly allied to the class of dropsies; but modern pathologists incline to the belief that it is a subacute inflammation of the membranes of the brain, and therefore, in strict nosological language, the *phrenitis hydrocephalica* or *infantilis*. The disease, though very common, was not described with any degree of accuracy until about ninety years ago, by Mr. Paisley, in vol. iii. Ed. Med. Essays. In 1768 it was made the subject of an essay by Dr. Whytt. In 1808 a very complete description of the disease was given by Dr. Cheyne. Dr. Monro has described it with great accuracy in the first volume of his Morbid Anatomy of the Brain.

Hydrocephalus prevails chiefly among children from the third to the sixth year of life. It has been noticed, indeed, as early as the second year, and as late as the fourteenth. After that period it is seldom met with. From the circumstance of its occurring for the most part in children, the symptoms of the disease do not always admit of being very accurately ascertained. This contributes, with other circumstances hereafter to be noticed, to obscure the diagnosis. Hydrocephalus may, for the purposes of instruction, be considered as exhibiting four stages or sets of symptoms; but the distinction must be viewed as a very arbitrary one. In many cases the symptoms of different stages will be found blended together, or one or more of them altogether wanting.

First stage.—The symptoms which characterize the first, or premonitory stage of hydrocephalus, are those of common *infantile fever*, such as often accompany the state of dentition, or a disordered state of the bowels, more especially when complicated with the presence of worms. The pulse is quick, the skin hot, the sleep disturbed, the tongue white; there is some degree of nausea and vomiting, with thirst, and loss of appetite.

In some cases fits of chilliness have been observed. The child droops. He is languid and listless. The fauces being very dry, he picks the nose so as often to make it bleed. The body wastes, and the skin is flabby. The symptoms have irregular exacerbations and remissions; so that this state of disease is generally known by the name of *infantile remittent fever.* An exacerbation usually takes place towards evening.

Second stage.—The second set of hydrocephalic symptoms are those which more unequivocally direct attention to the head as the seat of disease. They are—extreme restlessness, so that the child is never out of the nurse's arms;—giddiness, or the sensation of falling;—headache, sometimes diffused, sometimes referred to a particular spot;—impatience of light and noise;—a flushed countenance;—præternatural redness of the conjunctiva;—contracted pupil;—tossing of the arms to the head;—and occasional screaming or shrieking without any obvious cause. The stools are slimy, green, and remarkably depraved in their aspect. These symptoms, joined to the ordinary marks of feverish excitement, denote a state of acute inflammatory action of the vessels of the brain.

Third stage.—The train of symptoms which characterize the third stage of the disease are of a different kind. The pulse, before quick, becomes slow, intermitting, or irregular. The pupils are permanently dilated, and cease to contract on the approach of light. There is strabismus, or squinting. Instead of being restless, and tossing about his arms, the child falls into a state of stupor, and is insensible to things and persons around him. The screaming fits occur more frequently, and there is almost constant moaning. The child will often vomit on being brought into an erect posture. There is grinding of the teeth, and startings of the tendons. Fits of complete convulsion succeed, sometimes without apparent cause, sometimes brought on by any sudden exertion. Occasionally the child is paralysed on one side; or there is partial paralysis, as of the levator palpebræ. These symptoms indicate that water is poured out by the vessels of the brain, particularly by those of the arachnoid membrane and choroid plexus.

Fourth stage.—If the child survives, it is occasionally found that after a time the pulse again rises, so as to beat 150 or more in a minute, and is withal small and feeble. The skin is dry and burning hot. The child lies perfectly insensible, and takes no nourishment from actual inability to swallow. The stools and urine pass involuntarily. The face is pale; the tongue dry and brown. Severe pustular ophthalmia is sometimes witnessed. The immediate approach of death is often preceded by gangrenous spots, or ecchymoses, appearing particularly about the neck, hips, or tips of the ears. This group of symptoms I have several times seen to occur where the child, during the previous stage, had been kept in a state of perfect quietude.

The great variety which exists as well in the symptoms of hydrocephalus, as in the order in which they appear, demands some more particular notice. The first stage is sometimes altogether wanting, the attack being *sudden*, and perhaps the first evidence of the disease a strong convulsion fit. In many instances the pulse never becomes slow. In a still larger proportion of cases, the disease never exhibits that remarkable change from the slow to the *rapid* pulse, which characterizes the fourth stage. Occasionally, there is neither permanent contraction nor dilatation of the pupil, but throughout the *whole* course of the disease an irregularity in the contractions of the iris may be noticed. The pupil dilates on the approach of the candle, and contracts as it recedes. In a few cases I have seen children continue sensible to the last moment. Other, and even more singular varieties in the symptoms of hydrocephalus will be found recorded in the writings of authors.* The child sometimes talks incoherently, or uses one word for another; but it is certainly worthy of remark, considering the universality of *delirium* as a symptom of phrenitis in the adult, how rare is aberration of intellect in this, or indeed in any of the diseases of early life.

Prognosis.—The duration of hydrocephalus is liable to almost as much variation as the symptoms which characterize it. It has been known to prove fatal in a week. Some cases run on even as far as two months, but these are comparatively rare. The average duration of the complaint may be stated to be three weeks. The general opinion of the world has sufficiently stamped it as a disease of urgent danger. Dr. Whytt did not save more than one out of twenty cases. Many practitioners of great experience have seen only two or three instances of favourable termination, when the symptoms were so strongly marked as to preclude all possibility of being deceived as to the nature of the complaint. It has been remarked, that palsy in the latter stages of the disorder is a more favourable occurrence than convulsion. I have myself witnessed a case of recovery after complete hemiplegia.

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* See Monro on Hydrocephalus, page 96.

Diagnosis.—To determine what the diseases are, with which hydrocephalus is liable to be confounded, is an object of some importance. 1. The first is common or typhus fever. To guard against this source of fallacy it should be borne in mind, that idiopathic fever is not common in young subjects, and that hydrocephalus is. Unless the evidence therefore be very unequivocal (as where the disease can be *distinctly* traced to contagion), the symptoms should always be attributed to hydrocephalus, and not to typhus.

2. The second source of difficulty in the diagnosis, arises from the *early* symptoms of hydrocephalus being in every respect the same with those which accompany abdominal irritation; but chiefly from the important pathological principle, that several abdominal diseases, particularly those of children, are liable, in their progress, to affect the brain and nervous system, and to produce symptoms resembling those of the *latter* stages of hydrocephalus. The exact nature of these abdominal affections has been a frequent subject of dispute. By some it is supposed that derangements in the *hepatic* system have a strong tendency to produce hydrocephalic symptoms; but I do not believe that the liver is more, if even so much concerned in this, as the stomach and intestinal tract. A mere functional disturbance of these organs gives rise to remitting fever, headache, and vomiting. The presence of worms creates a degree of irritation that in the most striking manner counterfeits hydrocephalus. But of all the states of abdominal disease liable to be mistaken for it, by far the most important is inflammation and ulceration of the mucous coat of the small intestines, particularly the ileum. In its latter stages, this disease is attended in children with coma, dilated pupil, and screaming; these symptoms indicating a secondary affection of the brain and nervous system.

3. With reference to the diagnosis of hydrocephalus, it must further be observed, that in some instances, convulsions, coma, screaming fits, and other unequivocal symptoms of oppressed brain succeed to what appears to be pneumonia, the previous urgent symptoms having been difficult breathing, cough, and a

hard contracted pulse. These cases are extremely deceiving. On dissection the thoracic viscera often appear healthy, while the ventricles of the brain are perhaps *loaded* with serum. The correct explanation of the phenomenon appears to be this. The mucous membrane of the bronchia first receives the impetus of the febrile action. After a time the brain suffers, and, weakened by prior ailment, frequently gives way, and the result is serous effusion.

Morbid anatomy.—Dissections in hydrocephalus exhibit the ventricles more or less distended with fluid. The quantity varies much, and can never be anticipated from the violence of the preceding symptoms. From one to six or eight ounces are generally found. The effused fluid does not coagulate on the application of heat, like the serum of the blood, or many other dropsical fluids; nor do we see flakes of lymph floating in it. Where the disease occurs at an early period of life, the quantity of effusion has sometimes been such as to cause a tumour on the anterior fontanelle. In a case recorded by Dr. Baillie, the ossa parietalia were separated to a considerable extent, after being to all appearance firmly closed.* Tumours, probably of a scrophulous kind, have been also met with, of different sizes, situate either in the substance of the brain or cerebellum, or attached to the membranes. It has often occurred, that where hydrocephalic symptoms have been the most strongly marked, no morbid appearances have been discovered in the brain on dissection. In most of these cases the constitution of the child is weak, and yields to the impetus of the disease, before time is given for effusion. In a certain proportion of them, organic disease sufficient to account for death might possibly be found in some other part of the body, were the dissection fully prosecuted.

The appearances presented after death sufficiently prove the inflammatory character of this disease. The effusion of coagulable lymph and of pus are indeed unknown, and in this respect hydrocephalus differs from the phrenitis of adults, but such differences are fully explained by the peculiar circumstances of the infantile constitution.

Causes.—The great predisposing cause of hydrocephalus is *constitutional debility.* We meet with it in the children of weakly parents,—in those whose dentition has been slow, and languid,—whose system has been ill nourished, or who have suffered from prior diseases, that leave the body weak and exhausted. We must also connect it in an especial manner with the scrophulous diathesis. Its occurrence in scrophulous families, its alternation with other forms of scrophulous disease, its connection with scrophulous deposits in the brain, and other textures of the body, form the strong grounds on which this opinion is supported. The most common exciting causes of hydrocephalus are teething and cold. In this country it is most frequent in the months of October and November, when the tender frame of the child first feels the influence of the atmospheric cold. To these most frequent causes of the disease, we must add suppressions of tinea capitis, herpetic eruptions, or scrophulous runnings behind the ears; injuries to the head; and previous diseases, especially measles, scarlatina, pneumonia, and hooping-cough. We are authorized in laying it down as a general rule, that in these and all the febrile disorders of children, there is a *tendency* to that form of phrenitic inflammation which terminates in serous effusion. In the treatment of infantile complaints this principle must be steadily kept in view, as it is *practically* of much more consequence than any attempt to discriminate such diseases from hydrocephalus by fine and arbitrary distinctions. Lastly, it is unquestionable, that the disease has arisen in many cases without the slightest assignable cause.

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* Medical Transactions of the College of Physicians, vol. iv. p. 1.

Treatment.—The object of treatment in hydrocephalus is to diminish that general inflammatory excitement, and that flow of blood to the head, which exist during its early stages; and afterwards to promote, if possible, the absorption of the effused fluid. In what we have called the first or premonitory stage, reliance is to be placed on purgative medicines, particularly rhubarb and calomel, or the powder of scammony and calomel, formerly called the pulvis basilicus. Scammony is peculiarly adapted for the treatment of a disease, in which torpor of the bowels and great depravation of their secretions form so prominent a part.

℞. Hydrarg. submur. gr. ij.
Pulv. scammoneæ,
Sacchari purificati, *sing.* gr. iv. Misce.
Fiat pulvis.

This dose must be repeated at short intervals, so as to ensure a full action in the bowels. The effect may be aided by injections. A blister to the scalp is often serviceable, especially in habits liable to herpetic eruptions.

When the symptoms of phrenitic inflammation, or, as some would rather say, of cerebral excitement, develop themselves, the jugular vein must be opened, or a vein in the arm, and from four to six ounces of blood taken away. Of the indispensable necessity of blood-letting in hydrocephalus, I can hardly express myself too strongly.* Much of the danger commonly imputed to this disease may be referred to the neglect of this necessary evacuation. If bleeding in the jugular vein, or arm, should unfortunately be found impracticable, or, from the tender age of the patient or other cause, be considered decidedly unadvisable, leeches or cupping may be substituted. Great advantage is always derived from the application of cold lotions to the head. It is hardly ever requisite to apply ice.

When the symptoms indicate that water is effused, bleeding is for the most part ineffectual, and even sometimes absolutely prejudicial. It ought not, however, to be forgotten, that the symptoms of effusion are equivocal, and that an inflammatory condition of the cerebral vessels does not always subside, even when effusion has actually taken place. Blisters should now be applied, either to the crown of the head, or to the arm, or better perhaps to the back of the neck. Considerable caution is requisite in applying blisters to children. Their skins are generally very delicate and irritable, and in feverish states of the body (when the skin is *hot* and *dry*) they occasionally produce very high local inflammation, ending in sloughing or gangrene, or such a degree of nervous irritation, as terminates the life of the child by a convulsive fit. The use of active purgatives should be continued; and, with a view of directing the fluids upon the kidney, small doses of the tincture of digitalis may be given every four hours in a simple saline draught. Under the idea of stimulating the absorbents to remove the effused fluid, mercury has been strongly recommended. For this purpose calomel with sugar may be given in doses of two or three grains, frequently repeated. Mercurial inunction may be resorted to where the power of swallowing is lost. In a few cases this mode of treatment has proved effectual. Salivation is not easily excited in children, but it sometimes occurs, and has even occasioned considerable inconvenience.

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* Some excellent observations on blood-letting, as applicable to the diseases of infantile life, may be found in Dr. Clarke's Commentaries on the Diseases o Children, chap. vi. pages 148—160.

CHRONIC HYDROCEPHALUS.

The chronic form of hydrocephalus is accompanied by enlargement of the skull; and it is surprising to witness the size which the head will sometimes attain in this disease. On one occasion I found the head of a child, eleven months old, to measure twenty-three inches in circumference. The parietal bones were seven inches apart, and four pints of fluid were contained within the brain. On dissection, the brain appears flattened out, but will be found to weigh about as much as a healthy brain would have done at the same age. In consequence of the yielding of the bones the usual symptoms of compression do not come on. Indeed, in the progress of this disease, the functions of the body generally are very little, often not at all, impaired till a short time before death. It is almost incredible how little the powers of the mind are affected by this disorder. Dr. Monro states, that in no instance seen by him could it be said that the intellect was deranged. In one remarkable case, of twenty-six years' duration, in which the head measured forty-four inches in circumference, the patient displayed a very affectionate disposition towards his parents, entered into the amusements of his brothers and sisters, and enjoyed a tolerably retentive memory.

Chronic hydrocephalus is sometimes congenital; and though it more usually shows itself during the first month, probably commences in all cases while the child is still in utero. The predisposition to it is given by the scrophulous constitution of the parents.

Attempts have been made to afford relief to this apparently hopeless state of disease by tapping, and several successful cases have been recently recorded. The operation, however, is attended with some risk, and is not generally to be recommended. Bandaging of the head has been tried, but without material benefit. The complaint does not necessarily prove fatal at an early age, a few cases being on record of its continuance to an advanced period of life.

CHAP. V.

OPHTHALMIA.

Structures primarily affected. Inflammation of the Conjunctiva. Mild and Purulent. Consequences of Purulent Ophthalmia. Causes. Peculiarities of Scrophulous Ophthalmia; and of Syphilitic Iritis. Principles of the treatment of Common Ophthalmia; of Scrophulous, Syphilitic, and Variolous Ophthalmia.

For many years past surgery has claimed for itself the almost exclusive management of ophthalmic diseases. It will not, therefore, be necessary here to enter into the consideration of the subject further than may suffice to give to the student of physic a general acquaintance with the principal pathological doctrines which it involves. Since the commencement of the present century, when the purulent or Ægyptian ophthalmia first began its ravages in the British armies, the attention of medical writers has been strongly directed towards it; and the variety of large and valuable works on ophthalmia which have recently appeared from the pens of some of our ablest surgeons bespeak at once its importance, difficulty, and extent.

Inflammation may begin in almost every one of the structures of which the eye is composed; but the principal primary seats of ophthalmia are, the tunica conjunctiva, the sclerotica, the iris, and the meibomian glands. The structure primarily implicated depends in a great measure upon the source from which inflammation springs, and certainly in no other disease are the phenomena so remarkably modified by diversities of exciting cause.

Common conjunctival ophthalmia.—The structure most frequently affected is the conjunctiva, in function resembling a mucous membrane, though in appearance more nearly allied to those of the serous class. The inflammation of this membrane is characterized, in mild cases, and where the disease arises from common causes, by pain,—intolerance of light,—a sensation of sand in the eye,—head-ache,—redness of the eye,—and an *increased flow of tears*. The general febrile symptoms are slight, or perhaps altogether wanting. Under judicious management the disease gradually goes off, without leaving any permanent bad effects.

Purulent or Ægyptian ophthalmia.—In the severer forms of ophthalmia, the invasion is often sudden, the progress of the disease rapid, and its result disorganization of all or some of the structures necessary to vision. Besides the symptoms already enumerated, there occur in this form of ophthalmia, swelling of the eyelids, and secretion of purulent matter by the inflamed membrane, often in enormous quantity, and from a very early period of the disease. The conjunctiva quickly loses all traces of transparency, and exhibits instead, a mass of spongy red granulations, in which the transparent cornea may sometimes be observed as at the bottom of a well. This inflammatory thickening of the membrane, from the increase of its vessels, is called *chemosis*. The other symptoms are in a proportionate degree of violence. The headache is excruciating. The smallest ray of light gives intense pain. The accompanying febrile symptoms run high, and are for the most part aggravated towards evening.

The further progress of this form of ophthalmia depends in a great degree upon the measures of treatment which may be adopted in its early stage. If these are judicious, the symptoms begin to yield about the third day, and in the course of some weeks the eye is restored to its natural state. But if the disease be unusually violent, or its early stages neglected, disorganization of the eye follows to a greater or less extent. In some cases the ball of the eye becomes involved in one uniform mass of suppuration, and is totally lost. This, however, is rare. The disorganization is generally confined to one or other of its different structures. The inflammation, for instance, spreads from the conjunctiva covering the sclerotic coat, to that more delicate part of the membrane which extends over the cornea, and the consequence is either opacity or thickening of the cornea, occasioning total or partial blindness;—or open ulceration of the cornea, a state of disease attended with a remarkable degree of pain;—or *interstitial* ulceration of the proper membrane of the cornea (the delicate layer of conjunctiva which covers it remaining entire). This kind of ulcerated cornea occurs often in debilitated states of the system, and is accompanied by a deficiency, or total absence, of that action in the vessels which is necessary to repair the loss of substance.

During the progress of the aggravated form of ophthalmia, lymph or pus may be effused into the anterior chamber of the eye. If pus is effused to any extent, the cornea is pushed forward, presenting the appearance called hypopion, or poached eye. When the cornea gives way by sloughing, the iris is protruded, constituting that painful and nearly incurable condition called *staphyloma*. The iris sometimes contracts adhesions, particularly with the capsule of the crystalline lens, and with the posterior layer of the cornea, whereby the motions of that membrane are lost, and blindness, to a greater or less degree, is produced.

Occasionally it happens, as a consequence of ophthalmia, that the *eyelids* suffer, either with, or without permanent disorganization of the eye itself. Their internal surface, for instance, remains red and granular; and this in its turn renews the inflammation of the conjunctiva covering the ball of the eye, and leads perhaps to opacity of the cornea. At other times the cartilaginous edges of the eyelids are the parts affected, and the eyelids are either everted, forming the disease called *ectropion*, or the tarsi are turned inwards upon the ball of the eye, constituting the *entropion*. In weak and scrophulous habits, a chronic inflammation of the conjunctiva frequently succeeds to a more acute attack.

Causes of conjunctival ophthalmia.—Among the more obvious of its exciting causes, may be enumerated mechanical and chemical irritations, such as acrid fumes, or a drop of spirit getting into the eye, or an eyelash turned inward. To these may be added the glare of a tropical sun, walking against a very strong wind, or too long exercise of the eye, especially if directed upon any minute object.

But besides these causes of ophthalmia, which may be supposed to operate upon the eye *directly*, there are many which act through the medium of the general system. Cold may be mentioned as one of the most frequent. Heavy dews, succeeding great heat, have often been observed to produce ophthalmia. Bile and sordes in the stomach and bowels have also occasioned it. Intemperance leads to a chronic state of inflammation of the eye. The presence of fever in the body, and the circulation of an exanthematous poison, have brought on ophthalmia, as we judge from its so frequently accompanying catarrh, hydrocephalus, measles, and small-pox. In many cases ophthalmia must be regarded merely as the evidence of an inflammatory or very highly excited state of the vessels of the brain. As it often happens that inflammation of one eye is succeeded by a corresponding affection of the other, sympathy of the eyes has been justly regarded as an exciting cause of the disease. *Habit* may be looked upon in the same light. It is well ascertained, that a soldier who has once suffered from a severe attack of ophthalmia, is liable to have it renewed by very slight causes, such as a night-guard or a debauch. No doubt can be entertained, that among the exciting causes of the severe pustular or Ægyptian ophthalmia, *contagion* deserves to be noticed. The experience of the army fully warrants this principle of pathology.

One of the most remarkable of all the sources of ophthalmia still remains to be mentioned:—the repulsion of gonorrhœa, or metastasis from the urethra to the eye. The occurrence is rare, but it is sufficiently ascertained. Some have attempted to explain the phenomenon by supposing that there is a direct application of the gonorrhœal matter to the eye; but this is altogether an unsatisfactory hypothesis. Ophthalmia from repelled gonorrhœa is always a violent disease, resembling in every respect the worst forms of Ægyptian ophthalmia. While the eye continues inflamed, the discharge from the urethra generally ceases. The circumstances which tend to produce this metastasis, or translation of the disease, have never been explained, though they are probably within our reach.

Various circumstances concur in rendering ophthalmia both so frequent and so violent in Ægypt. They are, the burning wind from the desert, the innumerable particles of fine sand which float through the air, the brightness of the morning sun, and the severity of the evening dews.

Such are the most important of the causes of common inflammation of the eye. We have next to notice those which not merely operate as exciting causes, but give a peculiar *character* to the disease. Of these the most important are *scrophula* and *syphilis*.

Scrophulous ophthalmia.—When ophthalmia occurs in a scrophulous habit of body, the parts most usually attacked are the conjunctiva, the tarsi, and the meibomian glands. The disease is very common in young children from the time they are weaned, and is often the first indication of the presence of the scrophulous diathesis. Scrophulous ophthalmia occurs both in the acute and chronic form. The appearance of the eye in either is very characteristic. The disease is attended with a high degree of impatience of light, and a profuse secretion of tears, greatly exceeding what might have been expected from the severity of other symptoms. The patient closes the eye so firmly and obstinately, that the utmost force is unable to separate the lids. It is accompanied by a copious secretion from the glands of the tarsi of a thick matter, which during sleep agglutinates the eye-lids. It is often followed by ulceration of the cartilaginous edges of the palpebræ, which under bad management may continue to harass the patient for a number of years.

Syphilitic iritis.—The venereal poison is occasionally the cause of inflammation of the conjunctiva, but for the most part venereal ophthalmia assumes the form of inflammation of the iris. In this disease there is increased sensibility of the eye, with pain in the eye-ball, but without the usual redness of the conjunctiva. The fine air-like vessels of the iris may be observed injected with red blood, or small specks of blood may be seen extravasated upon that membrane. In a more advanced stage of the disease, the fibres of the iris are occasionally agglutinated. The edge that looks inward appears thickened and immovable. A layer of lymph, or a globule of pus, may be seen upon it; or it is found adhering to the cornea or capsule of the lens. The latter stages of *iritis* are attended with severe pain, aggravated towards night.

Treatment of ophthalmia.—The treatment of ophthalmia involves too many surgical details to be entered upon with any minuteness here. During its early stages, and before any disorganization of structure has taken place, its treatment must be conducted on those general principles which are applicable to all inflammatory diseases. In the purulent and pustular forms of ophthalmia, the depleting system must be early resorted to, and vigorously pursued. Bleeding at the arm (in some cases opening the temporal artery), local blood-letting, especially by cupping-glasses applied to the temples, active purging, blistering, and nauseant doses of emetic tartar, are to form the groundwork of the treatment. Warm narcotic fomentations to the eye, assiduously applied, are of considerable use. In milder cases, leeches, purgatives, and astringent collyria, will be sufficient. The eye must be carefully secluded from the light. When the disease has assumed a chronic character, some applications of a stimulant kind, as the diluted citrine ointment, an ointment containing a proportion of lunar caustic, alum lotions, or the vinous solution of opium, are eminently serviceable.

Scrophulous and venereal ophthalmia require a treatment adapted to the particular circumstances of the exciting cause. In scrophulous ophthalmia an antiphlogistic plan of treatment must be judiciously combined with the administration of such medicines, and the observance of such a regimen, as are found useful in counteracting the scrophulous disposition. A grain of calomel should be given every night, and the ung. zinci applied daily to the edges of the eyelids. In severe cases change of air will contribute essentially to the cure.

In iritis, whether arising from its most usual source, the syphilitic virus, or from any other cause, the employment of mercury is indispensable. Calomel, with opium, must be given in repeated doses, so as to bring the system as rapidly as possible under the mercurial influence.

VARIOLOUS OPHTHALMIA.

The variolous ophthalmia is perhaps of all the varieties of this complaint the most uncontrollable. It commences, for the most part, about the eighth or ninth day of the eruption, when the scabbing process is about to take place. It is a severe pustular inflammation, often associated with violent diffuse inflammation of the integuments in some part, running into sloughing or gangrene, or with extensive cutaneous ulceration and hæmorrhage. This condition of the surface precludes in a great measure the employment of active measures for the relief of the eye, and the consequence is either total destruction of that organ, or such disorganization as leads to eventual blindness. Bleeding from the arm, leeches to the temples, and active cathartics, afford the only effectual means of relief; but the loss of blood which the intensity of the symptoms indicates, would often be followed by great and rapid exhaustion. To save the patient's life, therefore, the eye must sometimes be sacrificed. Mercury here is useless, and local applications of a stimulant kind improper.

CHAP. VI.

CATARRH, SORE THROAT, AND THE MUMPS

Symptoms of Catarrh. Its Causes and Consequences. Peculiarities of the Epidemic Catarrh. Its origin. Treatment of Catarrh. Symptoms of Cynanche Tonsillaris. Its Causes, Terminations, and Treatment. Symptoms, Causes, and Consequences of Cynanche Parotidœa. Of Angina externa, or Cynanche cellularis.

Catarrh is the inflammation of the Schneiderian or mucous membrane of the nose. Dr. Cullen united it with inflammation of the mucous membrane lining the bronchia, but separated it from the other phlegmasiæ, on the plea of a peculiarity in the mode of its termination. On several accounts it is advisable to deviate from both these points of arrangement.

Catarrh is characterized by a sense of fulness in the nose, of weight or fulness in the head, with an altered state of the secretion of the part, and more or less general fever. At first, the secretion from the membrane is altogether checked. The nose is stuffed and dry. After a time a thin acrid fluid is secreted, which gradually increases in quantity, becomes opaque, and alters in colour, until at length it is restored to its healthy condition. The inflammation generally extends to the mucous membranes in the neighbourhood; and hence redness and watering of the eyes, hoarseness, a sense of rawness in the windpipe, cough, and often a degree of oppression about the chest, with difficulty of breathing, accompany the other symptoms.

This disease, if properly attended to, seldom lasts long, but by neglect it is protracted, and not unfrequently leads in those of plethoric habit to severe bronchial inflammation, or to pneumonia—in scrophulous habits to affections of the larynx, hæmoptysis, and phthisis. In some persons there is a very strong disposition to catarrh, and this is one of the marks of a scrophulous constitution. The only exciting causes of *common* catarrh are cold, and changes of weather; but there is a very curious variety of this disease, which spreads in the manner of an epidemic, and is well known under the name of *the influenza*. From the earliest records of the world epidemic catarrhs have been noticed. In the last century, fifteen are distinctly described, the most remarkable of which was that of 1782. During the present century two only have occurred; viz. in 1803 and 1833.

Influenza.—The chief peculiarities of the epidemic catarrh are, that its attack is for the most part very sudden, and accompanied with an uncommon degree of languor and debility. This usually continues through the whole course of the disease, and even sometimes after the other symptoms have declined. It runs its course in three or four days. It is attended with a more urgent headache, and with more disorder of the stomach, than occur in common catarrh. But severe as it sometimes is, the influenza is not a disease of danger. The bills of mortality seldom indicate any notable increase in the proportion of deaths during the existence of such an epidemic. Elderly persons, and those whose lungs were previously tender, are those who chiefly suffer by it, the catarrhal symptoms merging in the acute or subacute forms of bronchitis, and terminating in the copious and sometimes fatal effusion of mucus or pus into the air passages.

The origin of the epidemic catarrh, like that of all other epidemic diseases, is involved in mystery. The circumstance of its visiting in succession different countries, and resisting in its progress the extremes of European heat and cold, is conclusive as to its being something more than a common catarrh, produced by variations of atmospheric temperature. In April, 1833, when the disease, after an interval of thirty years, revisited London, the weather was unusually mild. The notion of its spreading by contagion and personal intercourse, which, in almost all prior visitations of the epidemic, had been entertained, was, on this occasion, completely abandoned. The general feeling was, that there existed some *temperies aëris occulta*, to which the disease was owing, but no attempts to explain its nature were offered. If the disorder be communicable by effluvia, its contagion must be of an extremely diffusible nature, and its latent period very short, not exceeding a few hours.

Common catarrh is seldom of sufficient importance to become an object of medical treatment. In many cases, it may be left with perfect safety to nature, when a spontaneous perspiration will relieve the symptoms. If it prove somewhat more severe, the patient should keep within doors, abstain from animal food, take an aperient draught, and promote diaphoresis by the pediluvium and mild diluent drinks. To alleviate the cough, if it prove urgent, recourse may be had to a mucilaginous mixture or an oily emulsion. The hoarseness and sensation of rawness in the trachea are often lessened by the use of Mudge's inhaler. If there be considerable oppression about the chest, with difficult expectoration and fever, antiphlogistic measures of more activity must be resorted to, proportioned to the violence of the symptoms, such as will hereafter be mentioned when treating of thoracic inflammation.

The epidemic catarrh, being usually a more severe form of the disease, requires a more active treatment.

The following pills should be given, in the first instance, with the view of clearing the primæ viæ, and diffusing the circulation :—

℞. Hydrarg. submur. gr. iij.
Pulveris Jacobi, gr. vj.
Extracti hyoscyami, gr. ij. Misce.
Fiant pilulæ duæ.

An active aperient draught may follow. To promote expectoration and diaphoresis, the following mixture may be directed :—

℞. Liquoris ammoniæ acetatis, ℥i.
Vini antim. tartar. ʒij.
Syrupi Tolutani, ʒvj.
Aquæ fontanæ, ℥iv. Misce.
Sumat partem sextam quarta quaque hora.

When feverish excitement has been sufficiently reduced, the cough will be alleviated by preparations of squill. An opiate should be given at bed-time. On account of the debility which accompanies the latter stages of this disease, bark and cordials are sometimes necessary at that period.

CYNANCHE TONSILLARIS.

Symptoms.—Sore throat or quinsy is the inflammation of the mucous membrane of the fauces, affecting especially the tonsils, and from thence spreading, so as to occupy, in many cases, the palate, uvula, pharynx, and membrane lining the back part of the nose. It is readily distinguished by the redness and swelling of the internal fauces, by the difficulty of deglutition, and the accompanying fever. When the inflammation runs high, the swelling of the tonsils is sometimes so great as to impede deglutition altogether, and patients have suffered severely, under such circumstances, from hunger and thirst. It sometimes extends to the orifice of the Eustachian tube, and produces deafness. Food or drink attempted to be swallowed are sometimes returned by the nose, and this is a sure sign of very severe inflammation. In many cases the tongue cannot be protruded without occasioning considerable pain. It is seldom that the breathing is affected.

The febrile symptoms which accompany cynanche tonsillaris are often urgent, and almost at all times severer than could have been anticipated from the extent of local disease, or the importance of the organ attacked. The pulse is often as high as 120, and the tongue covered with a thick coat of fur. Much febrile debility attends this disease, particularly where the inflammation, in its appearance and progress, has more of the spreading and erysipelatous than of the circumscribed or phlegmonous character. The duration of the disease is very various. Under common circumstances it will subside by resolution in the course of a few days; but occasionally a great degree of debility continues, and the convalescence is protracted for many weeks.

Terminations.—1. Cynanche tonsillaris frequently terminates, when the inflammation is active, by suppuration in one or both tonsils. The rapidity with which pus sometimes forms in the loose texture of these organs is very remarkable, but occasionally six or seven days elapse before the inflamed and highly stretched membrane gives way spontaneously. The matter of the abscess is fœtid and nauseous. The bursting of it is always followed by great and instantaneous relief.

2. When the inflammation, instead of being of a vivid red colour, has an aspect inclining to purple, we consider that it partakes of the nature of erysipelas, and it will then generally be found to terminate by superficial vesicles and ulcers, of a white or grey colour, similar in their nature to *aphthæ*. These often create a great deal of unnecessary alarm from their resemblance to the sloughs of cynanche maligna, but they commonly go off in a few days, and are productive of no other inconvenience.

3. In some cases the inflammation will neither advance nor recede; and I have in vain attempted to determine upon what this depends. It is most common in persons of a scrophulous habit of body, and who from their aspect might be considered

as predisposed to phthisis pulmonalis. After the lapse of a fortnight or three weeks, the disease will in such cases commonly give way, but occasionally a permanent enlargement of the tonsil remains. This will be found to occur chiefly in delicate young women.

4. Cynanche tonsillaris is a disease of little or no danger. It is rendered severe by neglect; and danger may sometimes be apprehended from the extension of inflammatory action to the larynx. Very few instances of fatal termination are recorded. Dr. Watson has described a rare but very interesting case of quinsy proving fatal by *hæmorrhage.** An abscess had formed which involved and ultimately occasioned ulceration of the lingual branch of the carotid artery.

Causes.—The immediate exciting cause of sore throat, is, in all cases, exposure to cold, either in consequence of getting wet feet, or from sitting in a partial current of air, particularly if the body be previously over-heated. It affects chiefly the young, and those of plethoric habit. It occurs especially in the spring and winter seasons, and in cold and variable climates. Habit increases the disposition to the disease, so that some persons scarcely ever pass twelve months without experiencing an attack of it, and in them it is induced by very slight causes. This affection occurs symptomatic of scarlatina, and small-pox, and it sometimes attends measles, lichen, catarrh, and croup. It is occasioned also by the poison of mercury and the venereal virus; but in all these cases there will be found sufficient in the aspect of the disease, or the concomitant symptoms, to prevent ambiguity in the diagnosis.

Treatment.—An antiphlogistic system of treatment is required in cynanche tonsillaris, but venesection is seldom necessary. Occasions, however, do occur, when loss of blood from the arm ought on no account to be omitted. An extremely acute pain in swallowing is the symptom that chiefly indicates the propriety of this measure. Leeches to the external fauces have been recommended, and are frequently very serviceable. If the inflammation runs high, the tonsils, or more properly the velum pendulum palati, may be scarified, and a little blood so obtained affords very effectual relief. In slighter cases, it will be sufficient to rub the throat with some rubefacient liniment, as the *linimentum ammoniæ*; and to direct the frequent use of a mild repellent gargle; such as the infusion of roses. Gargling should be carefully avoided in those acute forms of inflammatory sore throat, which occur in plethoric habits. In all cases an active purgative, repeated as occasion requires, is advisable. If much fever be present, the patient should be confined to bed, and frequent saline draughts administered. If suppuration is likely to take place, it may be promoted by the employment of mild emollient gargles, as of the dec. hord. compos. of the London Pharmacopœia. An emetic is sometimes directed with perfect safety, with the view of promoting the bursting of the abscess. The decoction of bark may be employed as a gargle when there are superficial ulcerations or specks, but taken internally it will be found to aggravate the febrile symptoms. As long, therefore, as the pulse remains frequent, with thirst and restlessness, saline draughts only should be given.

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* See London Medical Gazette, vol. iii. page 153.

When the disease is disposed to be stationary, a blister to the fauces, or to the upper part of the sternum, or behind the ears, will prove useful. In the state of chronic enlargement of the tonsil, little can be done by internal medicine; and gargles, even of the most powerful kind, are generally quite ineffectual. The disease sometimes yields in the most unexpected manner, probably in consequence of some change taking place in the constitution, but of which the nature is altogether inscrutable. Change of air has contributed in many cases to this desirable result. Tonics, which are often given under the idea that the disease depends upon relaxation of the habit, generally disappoint expectation. Some have recommended the removal of the part, either by the knife, or by ligature, when the disease has lasted a considerable time. In a few cases this may be done with propriety; but as a general rule it should not be resorted to, unless the breathing be impeded, or cough, or some other serious inconvenience be produced.

CYNANCHE PAROTIDŒA.

This disease, sometimes called Parotitis, or the mumps, is the inflammation of the parotid gland and surrounding cellular membrane, and is interesting chiefly in a pathological point of view.

It begins by symptoms of fever, soon followed by swelling of the gland, appearing as a tumour at the corner of the jaw, and gradually extending over the face and neck. The bulk of the swelling is occasioned by inflammation of the cellular tissue surrounding the body of the gland. The disease continues to increase till the fourth day, and then usually goes off by resolution. The mumps chiefly attacks children. It is often epidemic, and manifestly contagious. Occasionally, however, it attacks adults, occurs *sporadically*, and is attributable to cold. In a few cases it has been known to terminate by suppuration.

The most curious circumstance connected with the history of the mumps, is its tendency to affect the testicle by metastasis, and this most remarkably when it occurs in adults. The testicle swells as the inflammation of the parotid gland subsides; but this secondary affection seldom lasts long, or proves troublesome. In a certain number of cases, a further translation has taken place to the brain, and symptoms of genuine phrenitis have supervened.* It does not appear that either of these metastases can be prevented by medical treatment, or that they are relieved by any attempts to bring back the inflammation to its original seat. They must be treated in every respect as idiopathic inflammations of the testicle and brain.

Setting aside this consideration, the mumps can scarcely be said to require medical assistance. A saline purgative, warm fomentations, and confinement to the house, are all that it appears necessary to insist upon. In severe cases, leeches should be applied.

Inflammation of the parotid gland is not an unfrequent occurrence in the course of fevers, as well of the inflammatory as of the typhoid type. In scarlet fever it is often witnessed, and contributes, in many cases, to delay, for a very long period, the recovery of the patient.

ANGINA EXTERNA.

Diffuse inflammation of the cellular membrane of the neck is a rare but very formidable state of disease, which has been described under the title of Angina Externa, or Cynanche Cellularis. In 1821 I attended a case of this description, which proved fatal, by suffocation, on the seventh day from the invasion of the disease. It bore, in the first instance, the appearance of a rheumatic affection of the joints of the cervical vertebræ. On dissection, the cellular membrane of the throat and anterior mediastinum was found highly disorganized. In some parts sphacelus had occurred. The disease neither implicated the skin, nor the subjacent muscles.*

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* See a very instructive history of an epidemic mumps that prevailed on board his Majesty's ship Ardent, in November, 1807, by Mr. Noble.—Ed. Med. and Surg. Journal, July, 1808.

CHAP. VII.

INFLAMMATION OF THE LARYNX AND TRACHEA.

Laryngeal Inflammation. Symptoms of Acute Laryngitis. Its Causes and Treatment. Symptoms and Progress of Chronic Laryngitis. Treatment of Chronic Laryngitis. Of Aphonia and Hoarseness. Of Croup. Division into Spasmodic and Inflammatory Croup. Symptoms of Spasmodic Croup; of Inflammatory Croup. Causes. Treatment. Treatment of Spasmodic Croup. Of Bronchial Polypus.

THE inflammatory affections of the windpipe, though comparatively rare, are yet diseases of great importance; for this organ is essential to life, and the smallest disturbance of its function is sufficient to put life in danger. Inflammation of the larynx and trachea may co-exist, but they oftener occur independent of each other; and as their pathology is in many respects different, we shall consider them as distinct diseases. The larynx is subject both to acute and chronic inflammation, and these will require separate consideration.

ACUTE LARYNGITIS.

This is a very uncommon disease, and, until lately, appears to have been either altogether overlooked by authors, or mistaken for cynanche tonsillaris. The fullest, and, I believe I may add, the original account of the disease is by Dr. Baillie† in 1809, whose observations comprise almost every thing hitherto known concerning it. Since the appearance of Dr. Baillie's paper, many well marked cases of the same affection have been published by Dr. Farre, Dr. Arnold, and others, and the course and character of the disease are now well understood.

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* This case is recorded in London Med. and Physical Journal for October, 1822. (Vol. xlviii. page 287.) Other notices of Angina externa may be found in James on Inflammation, page 188. Kirkland's Inquiry into the present state of Medical Surgery, vol. i. page 159; and Transactions of a Society for the Improvement of Med. and Chir. Knowledge, vol. iii. page 360. (Case by Dr. Wells.)

† Vide "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge," vol. iii. page 275. A very distinct case of acute laryngitis with dissection, had previously been detailed by Mr. Mayd. See Med. Communications, vol. ii. page 479. 1789.

Symptoms.—Acute laryngeal inflammation may be distinguished at all times by the following remarkable combination of symptoms :—fever, pain referred to the larynx, difficulty of breathing and of swallowing, hoarseness, or complete loss of voice, and spasmodic exacerbations of all the symptoms, coupled with the most distressing sense of suffocation. In some cases the pain is increased by pressure upon the thyroid cartilage. The disease is attended by the perpetual hawking, or spitting up of a tough gelatinous mucus. If the epiglottis partake of the inflammation, which it often does, any attempt to pull the tongue forward will be attended with pain. In the course of the disease, the cellular membrane in the neighbourhood of the larynx has been observed to take on inflammatory action, from which has resulted hardness and fulness of the throat externally. In mild cases deglutition is but little impeded; but in most of the severe cases on record, the attempt to swallow fluids was followed by a violent spasm, sickness, and vomiting, and the fluid itself was sometimes forcibly rejected by the nose. The disease occasions to the patient a sense of alarm, wholly different from any thing observed in the progress of a common sore throat. Unless the symptoms can be very speedily reduced, the passage of the larynx is blocked up, and death produced by suffocation. The usual duration of urgent symptoms does not exceed four days. General Washington died of acute laryngitis on the 11th of December, 1799, after an illness of only twenty-four hours.

On dissection, the inner membrane of the larynx is found red and thickened, or œdematous. Pus is frequently met with in the sacculi laryngis; and sometimes, though not often, there is an effusion of coagulable lymph upon the membrane, as in croup. Acute laryngitis has only been known to arise from cold. It occurs chiefly in persons turned of forty, and Dr. Baillie suspects that a disposition to it is given by previous attacks of cynanche tonsillaris. As far as my observation extends, it occurs chiefly in languid and exhausted habits, and is *preceded* by a long period of debility and mental anxiety. It seems to prevail mostly in the months of March and April. The diagnosis from cynanche tonsillaris is sufficiently obvious. From cynanche trachealis, it is distinguished by the want of that peculiar sound of the breathing which we shall presently notice, and by the period of life at which it occurs.

Treatment.—The treatment of the disease is to be regulated by the view which has been taken of its pathology. A very prompt and vigorous practice can alone offer any prospect of successful termination. Large bleedings are required; and at the onset they should be pushed so as to produce fainting. The blood will seldom appear buffy. Leeches may be applied to the throat, when the violence of the symptoms has been subdued; and calomel should be given as soon as the power of deglutition has been in some degree restored. Any attempt, however, to give medicines internally while deglutition is dreaded, will aggravate the sufferings without lessening the danger of the patient. The bowels should at first be opened by means of emollient glysters. The evident tendency to spasmodic exacerbation in this disease points out that opium may be advantageously given, when the proper evacuations have been premised.

Tracheotomy.—The propriety of performing tracheotomy ought to be considered in every case. Within the last few years it has been practised often enough to show, that no danger need be apprehended from the operation itself; and the instances which are recorded of great benefit from it are numerous and striking. Some have advised it merely as a last resource; but if performed at all, it should undoubtedly be done when the powers of life are still adequate to the repair of injury. Whenever, therefore, the symptoms continue urgent, after the full trial of general and local blood-letting, the trachea may be opened, and the larynx will thus be left under the most favourable circumstances for ultimate recovery.

CHRONIC LARYNGITIS.

Chronic inflammation of the larynx is far from being so rare as the acute form of the affection. It usually begins by pricking pains in the larynx, some degree of fever, cough, and difficulty of breathing. The most striking symptom of the disease, when fully formed, is the long inspiration which occurs in consequence of the constriction of the glottis. The breathing is attended too with a peculiar noise, not unlike that which characterizes croup. To these symptoms are usually added, a copious but difficult expectoration of ropy mucus, a peculiar hoarseness or huskiness of voice, and often some degree of pain of the chest. The disease is attended by a slow, or hectic fever. The pulse is never full or strong, but always very frequent. The skin is hot, the tongue cherry red and dry, and the bowels costive. As the disease advances, respiration becomes more and more difficult, and is aggravated in paroxysms, during which the face often becomes livid. The patient at length dies from suffocation. The duration of the disease is various, extending from three to twelve months.

On dissection, ulceration is found within the larynx, generally in the sacculi laryngis; and along with it, there is commonly some degree of thickening of the surrounding parts, and, in a great majority of cases, ossification. Spicula of bone are to be felt within the ulcerated cavity. This phenomenon is not peculiar to ulcerated states of the larynx. It is observed in a variety of other cases of internal ulceration. Upon what pathological principle this connection of ulceration with ossification depends, has never, as far as I know, been hitherto explained.

Causes.—Chronic inflammation of the larynx is generally dependant upon the scrophulous habit of body. We are justified in this opinion by the frequent implications of the larynx in the progress of true tubercular phthisis. To this variety of consumption the term *phthisis laryngea* has been applied. Dr. Cheyne, in his Pathology of the Larynx and Bronchia, notices the occurrence of chronic laryngitis as one of the sequelæ of measles in children of scrophulous families, among whom it proves very fatal. It is not uncommon to witness the disease originating in constitutions worn down by syphilis and mercury.

Treatment.—The repeated application of leeches to the throat affords the best prospect of relieving this very dangerous disease. Vomiting is allowed by all to be very prejudicial, as it creates much pain. Any expectorant medicines which may be given, therefore, should be of the mildest kind. Alterative courses of calomel, with conium and opium, are usually recommended, in the hope of arresting the course of inflammation, and giving a new and healthier action to the vessels. For the same purpose we direct the daily use of the decoction of sarsaparilla, and a milk diet. Blisters may be tried. Bronchotomy has been performed in several cases, in some of which it has proved partially, and in a few, permanently beneficial.

APHONIA.

Permanent hoarseness, unattended by pain, fever, expectoration, or any other mark of disease, is far from being uncommon. It appears to consist in a thickening of the membrane lining the larynx. The complaint generally arises from alternate exposure to great heat and cold, and is often met with in those who live in damp kitchens. It is relieved by blisters applied to the sternum or nape of the neck, perhaps even still more by the application of the antimonial ointment:—

℞. Antimonii tartarizati, ʒj.
Unguenti cetacei, ʒvij.
Hydrargyri sulphureti rubri, gr. x. Misce.

Hot poultices of linseed meal, applied to the throat every night at bed-time, afford considerable relief. An expectorant mixture, containing the oxymel of squill, may be given repeatedly through the day.

℞. Oxymellis scillæ,
Spt. ætheris nitrosi,
Tincturæ camphoræ compos. *sing.* ʒiv.
Sumat cochleare j minimum pro dosi.

In the progress of consumption, particularly towards its latter stages, it is not unusual to find the patient complaining of pain referred to the larynx, and attended with hoarseness. From its violence it might be supposed owing to inflammation; but leeches and blisters are of no service, and it generally goes off in four or five days. It is probably a sympathetic pain, connected with the recurrent nerve.

CROUP.

Croup, or the acute inflammation of the mucous membrane of the trachea in children, was not described with any degree of clearness by the ancient authors. The first regular history of it is to be found in the letters of Martin Ghisi, 1749.

Dr. Home, of Edinburgh, made it known to the practitioners of this country by his "Enquiry into the Croup," published in 1765. For the fullest account of the disease which has since appeared, we are indebted to Dr. Cheyne.*

The term *croup* is applied to all cases in which the respiration of children is noisy or crowing. This sometimes occurs with, sometimes without, accompanying fever. Hence has arisen the division of cases of croup into two kinds:—1. The chronic croup, which has also received the several appellations of irritable, spurious, spasmodic, nervous, and intermittent, or bastard croup. 2. The acute or inflammatory croup.

SPASMODIC CROUP.

Children of an irritable habit and weak frame are occasionally affected by fits of noisy or crowing inspiration, apparently the result of spasm about the muscles of the glottis, which abate and recur, sometimes for years, without producing in the intervals any unpleasant effects. During the paroxysm the pulse is soft, and the skin cool. These fits of difficult breathing are brought on by various causes, such as a loaded state of the stomach, wind on the stomach, and accumulations in the bowels. Painful dentition frequently excites them. Any thing that agitates or frightens the child may bring on a fit of croupy breathing. Sometimes the disease arises suddenly, during sleep, and without the slightest assignable cause.

Spasmodic or spurious croup is frequently associated with spasm of the hands, eyeballs, or pterygoid muscles. In some cases general convulsions accompany the croupy respiration,† and the disease merges in hydrocephalus. These obvious proofs of its connexion with disorder of the brain, have induced some authors to call it the cerebral croup. There can be no doubt that it has for its predisposing cause a high degree of irritability in the nervous system of the child, and this manifests itself in the respiration. A strong tendency to spasm is apparent in all diseases which affect the air passages, whether inflammatory or otherwise. We have had occasion to observe it in the case of laryngitis. We shall trace it hereafter influencing the phenomena of acute and chronic bronchitis, of hooping-cough and asthma.

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* The Pathology of the Membrane of the Larynx and Bronchia. Edin. 1809.

† Consult Dr. Clarke's "Commentaries on the Diseases of Children," chap. iv. p. 87; and North "On the Convulsions of Infants," p. 253.

In no disease is it more strikingly displayed than in the several modifications of croup.

INFLAMMATORY CROUP.

Symptoms.—This severe disease is in some cases preceded by symptoms of common catarrh, and sometimes by an ulcerated sore throat. Occasionally, however, the disorder sets in without any initiatory stage. The true symptoms of croup show themselves from the very first, coming on towards the evening, or perhaps during the night. The child wakes with an unusual cough; and the inspirations, particularly those which immediately follow the cough, are long, and attended with that crowing noise, which is the most striking characteristic of the disease. The respiration, at all times laborious, is subject to spasmodic exacerbations, in which the suffering is excessive. Feverish symptoms succeed, and often run high. The pulse is frequent and hard, with thirst and extreme restlessness. The natural functions, as well as those of the brain, are not always disturbed in a corresponding degree. I have seen a child taking food and running about, while the disease was making rapid advances. If it proceed unchecked, all the symptoms are quickly aggravated. Respiration becomes more laborious, the cough troublesome, and the expectoration more and more difficult, until the child dies, either suddenly in a paroxysm of dyspnœa, or gradually by *suffocation.*

The usual duration of the disease, when violent, and uninfluenced by medical treatment, is about thirty-six or forty hours. Its danger is such, that if the alarming symptoms be not moderated during the first twelve hours, it generally proves fatal. If, by the efforts of nature or art, the child recovers, the convalescence is always tedious, and is frequently attended by the expectoration of portions of a membrane, whose origin and nature will presently be noticed. In a milder form of the disease, where the difficulty of breathing is not so urgent at the commencement, the cough about the second day becomes loose, and the skin moist, the fever abates, and the voice gradually recovers its natural tone.

Morbid anatomy of croup.—Examination of the trachea, in those who die of croup, has made us acquainted with a very peculiar morbid appearance; *viz.*, an adventitious membrane, or tube, of coagulable lymph, which is thrown out by the inflamed vessels of the trachea, and often of such thickness as in a great measure to block up the passage. It commences a little below the larynx, and extends, in many cases, to the bifurcation of the bronchia. A semi-purulent fluid is commonly found in the trachea at the same time, and occasionally traces are also met with of pulmonic inflammation. Frequent as is the appearance of such a preternatural membrane in those who die of croup, it is by no means to be considered as a constant or essential part of the disease. In many cases its development is superseded by the active interference of the physician. In others its formation is prevented by the weakness of the child's habit. The mode of breathing will often indicate the existence of this inflammatory deposit. The child is observed to throw the head back, so as to put the trachea on the stretch.

Causes.—Croup, whether of the acute or chronic kind, prevails among children from the first to the third year of life, and though occasionally met with as late as the tenth or twelfth year, it is yet obvious that the tendency to it diminishes in a remarkable manner as life advances. The almost complete immunity from genuine croup enjoyed by the adult is probably referrible to some alteration which the mucous membrane of the trachea and larynx undergoes about the period of puberty. Croup has, for its predisposing cause, as already observed, an irritable habit, such irritability being connected with, and probably depending upon, constitutional *debility*. Hence it happens, that children who suffer from croupy breathing generally display other marks of weakness. The skin is flabby. Dentition is slow and painful. Vaccination is imperfect. The ossification of the skull proceeds languidly.

The most usual exciting cause of croup is cold, and particularly exposure to a damp atmosphere. It prevails, therefore, chiefly in winter and spring, and is more common in cold and temperate climates than between the tropics. Children who have once had an attack of croup, are liable to have it renewed on the application of very slight causes. A common catarrh will, in such constitutions, be often attended by croupy symptoms, until the thirteenth or fourteenth year of life. Second attacks of croup are seldom so violent as the first, but they always require the utmost caution on the part of the practitioner.

Pathologists have almost invariably agreed in stating, that the croup is not contagious. Some cases, however, which have lately fallen under my care, incline me to believe, that this opinion has been adopted without due consideration; and in a disease so violent and fatal as croup, it is highly important that this question should meet with attention. It is acknowledged by Dr. Cheyne, that in those cases which are attended, at the commencement, by a sloughy state of the fauces, a suspicion of contagion may be entertained; but he suggests that these are cases of cynanche maligna, upon which croupy symptoms supervene. Such an explanation of the circumstance is certainly plausible; but without attempting to determine whether it be pathologically correct, I feel myself bound to act upon the principle, that croup, in its worst or most malignant form, is capable of being communicated by *contagion.**

Treatment of inflammatory croup.—With a view to treatment, croup has been divided into two stages; the first being that of inflammatory action, the second being denoted by the formation of that preternatural membrane, which we have already described. During the former, the chief reliance is to be placed on general and local bleeding, the warm bath, blisters, an emetic, and occasional purgatives. If these means fail to give relief in the first period of the disease, the object is then to promote expectoration, to relieve the disposition to spasm which so generally prevails at that time, and to support the strength of the system, which will commonly be found to have suffered from the previous measures of depletion. For these purposes, recourse may be had to preparations of squill, camphor, æther, digitalis, and opium, and to various medicines of the tonic and cordial kind. Some add to this an occasional emetic, the exhibition of small doses of calomel, and, as a last resource, bronchotomy. To this sketch of the general plan of treatment in croup, I shall subjoin a few practical suggestions.

A vomit of ipecacuanha, administered at the very outset of the disease, appears in some instances to have checked it altogether. The continued exhibition of emetics, with the view of removing the mucus or lymph, which may be collected in the trachea, is a practice which cannot be recommended. In a few cases I have found vomiting a very troublesome symptom. The great nicety in the treatment of croup consists in the management of the general and local blood-letting. Children do not bear the evacuation of blood like adults; and in this disease it often appears to increase the irritability, and disposition to spasm about the glottis. The relief, however, afforded to the breathing, by taking away a few ounces of blood from the jugular vein, in a full stream, is always great and immediate, and should never be neglected in the early periods of the disease. If the symptoms recur, and the pulse continue hard, it may be repeated a second time, but a few leeches to the throat will often supersede the necessity of further depletion from the system. An active purgative should be given consisting of calomel with jalap, scammony or rhubarb, and repeated as circumstances may require.

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* This question is considered, and various cases cited, illustrating the facts, in the Lond. Med. and Physical Journal for Oct. 1825, and Jan. 1826.

The exhibition of calomel in small, but frequently repeated doses (as from one to five grains every three hours) have been strongly recommended even from the commencement of croup, for the purpose of preventing or lessening the effusion of coagulable lymph. In a disease so rapid and dangerous this powerful measure ought never to be omitted, although my own experience would incline me to say, that the advantages of the practice have been rated much too highly. It is advisable in all cases to combine each dose of calomel with two grains of James's powder. The propriety of applying large blisters to the throat has appeared to me very questionable. Experience, as well as theory, induce me to think, that the irritation produced by blisters may sometimes extend to the inflamed membrane, and aggravate the symptoms of the disease. The warm bath frequently affords the most marked relief to the breathing, and may be directed every night, or even twice during the day. When the measures of depletion have been carried as far as the strength of the constitution admits, recourse must be had to such medicines as allay irritation and promote expectoration. The tincture of digitalis may be exhibited in small doses; and to the draught containing it may be added a proportion of oxymel of squills, and of the compound tincture of camphor. Laudanum, the ext. conii, or the spt. æther. sulph. may be substituted. The operation of bronchotomy has been suggested, but in croup I believe it to be altogether inadmissible.

Treatment of spasmodic croup.—This complaint will generally be found to yield to a gentle emetic, followed by a dose of calomel and rhubarb, proving that in many instances it is dependent upon a disordered condition of the primæ viæ. In urgent cases, threatening fits, leeches should be applied to the temples, and even in cases of less severity, it will be a proper precaution to keep the child's head cool, and by all other means to lessen determination of blood to the head. When the croupy inspiration recurs at intervals for a considerable length of time, assafœtida may be given with advantage. During the period of dentition, the free scarification of the gums should never be omitted.

BRONCHIAL POLYPUS.

This is a very rare disease, affecting adults, and like the croup is believed to be dependent upon inflammation of the mucous membrane of the windpipe and bronchia. It is characterized by catarrhal symptoms, wheezing, and the expectoration of portions of a membrane which must evidently have lined those parts. Such *polypi*, as they have been called, are sometimes solid, but more commonly tubular. The fit of coughing which displaces them is often alarmingly violent. The disease has been known to last many years.*

CHAP. VIII.

PNEUMONIA.

Of Thoracic inflammation. Its varieties. Acute Pleurisy. Its terminations. False membrane. Empyema. Secondary effects of Empyema. External signs of Pleuritic effusion. Paracentesis thoracis. Of Pleuritic abscess. Causes of Pleurisy. Prognosis. Treatment. Of Chronic Pleurisy. Acute Peripneumony. Its terminations. Resolution. Engorgement. Hepatization. Vomica. Purulent infiltration. Gangrene. External signs. Prognosis. Causes and Treatment of Peripneumony.

Thoracic inflammation, or pneumonia, offers to the pathologist a variety of important considerations, both speculative and practical. The subject has always been one of commanding interest, but the researches of modern authors have infused a precision into our views concerning it unknown to the ancients. In all ages, the different species of thoracic inflammation have had reference to the peculiar structures which are the seat of disease,—the principal of them being the mucous membrane of the bronchia, the parenchyma, or cellular tissue of the lungs, the pleura, and the pericardium. Each of these may be inflamed separately, or two or more of these structures may participate in disease. Further, there may be inflammation in one or both sides of the chest. Lastly, each disease may exist in an acute, subacute, or chronic form.

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* The writers on it are Drs. Warren, in Coll. Trans. vol. i. p. 407; and Cheyne, in Edinburgh Med. and Surg. Journal, vol. iv. p. 441.

This statement will suffice to show how extensive is the subject on which we now enter. It will be my endeavour to present a succinct view of the several *elementary* forms of thoracic inflammation, leaving to clinical study a familiarity with their several combinations. In the present chapter I shall treat of acute and chronic pleurisy, and acute peripneumony. The next chapter will be devoted to the consideration of bronchial inflammation. Chronic peripneumony will then come under discussion, and lastly, the acute and chronic pericarditis.

Thoracic inflammation, in all its various forms, is characterized by the combination of the four following symptoms,—fever, pain of the side, difficult breathing, and cough; which constitute, therefore, the definition of pneumonia. But each of these symptoms is variously modified by circumstances; of which the most important is the structure, primarily or most essentially implicated. In pleurisy, pain predominates; in peripneumony, dyspnœa; in bronchitis, cough; in pericarditis, general fever.

ACUTE PLEURISY.

This disease begins with rigors, and the other symptoms of general inflammatory excitement. At the same moment, the leading and characteristic feature of the complaint may be observed—viz., an acute lancinating pain of the side, called a stitch, and generally referred to the region of the mamma. The respiration is short and hurried, and is generally performed with most difficulty when lying on the side affected. A hard and short cough is almost always present; and, as it aggravates the pain, is stifled as much as possible by the patient. At first it is commonly *dry*, that is to say, without expectoration. The accompanying fever is urgent. The pulse is frequent, strong, and *hard*. The tongue is loaded with a thick fur. Thirst, restlessness, a hot skin, and a scanty and high-coloured state of the urine may be noticed. The concurrence of these symptoms precludes all possibility of ambiguity as to the nature of the disease, or the requisite means of relief. When blood is drawn from the arm, it will be found *cupped* and buffy. In some cases, inflammatory action is confined to a small portion of the pleura. At other times, the whole extent of its surface is involved in disease. Hence pleurisy is divided into two kinds, *circumscribed* and *diffuse*. Pleurisy differs too according as it is *simple* (affecting the membrane only), or as it implicates, to a greater or less degree, the contiguous portions of the substance of the lungs. This constitutes what is now called pleuro-peripneumony.

The diagnosis of acute pleurisy, in its early stages, receives no assistance from external examination of the chest; but this is less to be regretted as the general signs are so unequivocal. The progress and terminations of pleurisy will require a more detailed notice.

1. *Effusion of coagulable lymph.*—When first poured out, inflammatory lymph is a soft whitish substance, into which vessels soon shoot, and by means of which, in many cases, the opposite surfaces of the pleura are united together. It is worthy of remark, to how great an extent such adhesions may spread, without fettering the movements, or interfering with the functions of the lung. They may be either general or partial. The *false membrane* (as it is sometimes called) thus formed, varies in thickness, according to the intensity of the inflammation. In general, it greatly exceeds that of the healthy pleura.

2. *Effusion of serum, pus, or puriform fluid.*—Contemporaneous with the throwing out of coagulable lymph by the inflamed vessels of the pleura, is the effusion of a fluid, which may be either pure serum, bloody serum, pus, or what is much more common than any of these, an opaque puriform fluid, resembling whey, in which shreds of coagulable lymph may be found floating. To this termination of pleurisy the term Empyema is usually appropriated, the progress and diagnostic signs of which I now proceed to explain.

I. EMPYEMA.

The rapidity with which inflammatory effusion in pleurisy will sometimes take place, and the extent to which it will proceed in a short time, are surprising. I have seen upwards of a pint of puriform fluid collected in the chest, after thirty-six hours of acute inflammation. Sometimes the effusion takes place very slowly; and under such circumstances the constitution does not always sympathize, so that there may be no general symptoms to guide the physician to the seat of disease. This has been called latent pleurisy. Effusion may take place on both sides of the chest, but in general it is confined to one.

The effects of inflammatory effusion into the chest may be considered in a twofold point of view, viz.—1. Mechanical; and 2. Vital.

1. The effused fluid tends, when there are no adhesions, to press the lung of the affected side back into the space beside the vertebral column. Adhesions, when present, will of course modify the position of the lung, but it never can escape pressure. The air is squeezed out of it. It becomes dense, and, as the effusion increases, less and less fit for its function. In extreme cases, it is found as firm as an orange in the bottom of the thoracic cavity. 2. The effects of the effusion vary with the habit or temperament of the individual, and the nature of the fluid effused. True purulent matter, being the result of a more intense form of inflammation, always alarms the constitution the most. A very small quantity of purulent effusion, in a case of typhoid fever, will cause rapid exhaustion. Simple serum may remain accumulated in the cavity of the chest (as in that of the belly) for a long time, without creating any constitutional disturbance. Much, too, will depend upon the irritability of the habit: one person will struggle through an extent of external injury, or of internal disease, under which another would have sunk rapidly.

External signs of pleuritic effusion.—It is here where the value of auscultation is strikingly displayed. In an extreme case of empyema of the right side, the following circumstances would be noticed:—Enlargement of the side affected; increased width of the intercostal spaces, which may even project beyond the level of the ribs; a perfectly dull sound over the whole chest on percussion; total absence of all respiratory murmur on that side. With this, the natural condition of the left side of the chest will of course be contrasted.

The general symptoms accompanying this state of disease would be—difficult breathing, aggravated by lying on the left or *sound* side; cough, with expectoration of a purulent, and often peculiarly offensive matter; and lastly, hectic, characterized by frequent, and often very violent, fits of rigor, recurring at *irregular* hours. When these symptoms succeed, at the end of a fortnight or three weeks, to those of acute pleurisy, there can be no doubt as to the existence of empyema. When the disease takes place on the left side, displacement of the heart will contribute to assist the diagnosis.

The skill of the auscultator is displayed in watching the progress of the inflammatory effusion, from its first commencement to this its extreme state; in determining the extent to which other structures within the chest (the lungs themselves, their mucous membrane, or the heart) have become implicated in the inflammatory action; and, lastly, in avoiding the several sources of fallacy which are created by previously existing adhesions, or other diseases of the lungs. To enter into such details, however, is incompatible with the design of an elementary work. I shall, therefore, content myself with a brief notice of two circumstances, which have attracted much attention, viz., succussion, and œgophony.

1. Hippocrates proposed the succussion, or shaking of the chest, as a means of distinguishing pleuritic effusion; but it is now known, that no sound can be heard, unless air be present in the chest at the same time,—that is, unless empyema be combined with pneumothorax, a rare occurrence. 2. Laennec observed, that in the progress of pleuritic effusion, the resonance of the voice *through* the chest is altered. It becomes shrill and tremulous, and, from its supposed resemblance to the bleating of a goat, he named this œgophony. It occasionally appears and disappears. It has been supposed to depend upon the interposition of a thin stratum of fluid, between the somewhat compressed lung and the costal pleura. More recent pathologists have questioned the correctness of this statement, and have doubted whether the effused fluid does not, in all cases, necessarily gravitate to the most depending part of the chest.

Paracentesis thoracis.—Considering the violence and diffused nature of the inflammatory action leading to empyema, the degree of injury done to the lungs and pleura in its course, and the habit of body in which such acute diseases usually prevail, we cannot reasonably expect that many will recover, even though the fluid be evacuated. Still it is always proper, when the existence of the disease is clearly ascertained, to give to the patient the chance of that benefit which paracentesis thoracis affords. The operation may be performed between the fourth and fifth ribs, at their angle.

Pleuritic abscess.—The third termination of acute pleurisy is abscess. To constitute pleuritic abscess, the pleura must have contracted adhesions, and some portion of the neighbouring pulmonary parenchyma must have become implicated in the disease. It generally occurs as a sequel of circumscribed or partial pleurisy, and in plethoric or entonic habits. Consequently, it is much more frequently recovered from than diffused empyema, which frequently takes place in weakened habits, and during the secondary fever of those debilitating diseases, small-pox and scarlatina. Pleuritic abscess is often of very large size. Sometimes it proves fatal, like any other pent-up internal abscess, by hectic or irritative fever, diarrhœa, and exhaustion. Sometimes the abscess opens for itself a passage into the bronchial tubes. In this case the several symptoms correspond closely with those of common consumption. The abscess may thus be happily emptied, or the patient may die, exhausted by the copiousness of the discharge. Lastly, the pleura costalis may ulcerate. A tumor may point externally, and either burst spontaneously, or be opened by the lancet. Cases of the latter kind usually do well. The fact of the disease extending outwards, indicates a strength of constitution which augurs favourably for the ultimate recovery of the patient.

Causes of pleurisy.—This disease may arise in all habits, in the weak as well as the robust. It prevails chiefly in the middle periods of life. Infants and old people are rarely affected by it. It has for its chief exciting causes, cold and wet, chills, and sudden atmospheric changes. It succeeds small-pox and scarlatina; and occasionally is brought on by blows, falls, and injuries to the side.

Prognosis.—This is regulated chiefly by the strength of the patient's constitution, and the extent of surface occupied by disease The worst signs are, pain diffused over the whole chest, a very rapid pulse which does not fall after bleeding, and great dread of bleeding. A large proportion of cases of pleurisy recover. This may be ascribed partly to the natural mildness of the attack, but chiefly to the remarkable influence exerted over this disease by blood-letting.

Treatment of pleurisy.—The power of venesection over pleuritic inflammation was well-known to Hippocrates and Aretæus. A pound of blood is an average bleeding for an adult male.* It may be repeated at proper intervals, so long as pain remains. A severe case of pleurisy is seldom cured with less than the loss of fifty ounces of blood. Leeches and cupping-glasses to the side may be applied, where the weakness of habit prohibits recourse to general bleeding. Fomentations and poultices to the side may follow the application of leeches. Cold spirituous lotions to the part affected are sometimes productive of very great comfort. Saline diuretics, and occasional aperients, form part of the appropriate treatment. The skin may sometimes be encouraged to diaphoresis by small, but frequently repeated, doses of James's powder and opium. At a late period of the disease, a blister is often very serviceable.

II. CHRONIC PLEURISY.

The pleura is subject to chronic inflammation, the results of which are extensive adhesions, cartilaginous thickening and ossification of the pleura, and lastly, hydrothorax and empyema. The symptoms of chronic pleurisy are more equivocal than those of any other known disease. In many cases the pain, and other evidences of existing disease, are referred, in the first instance, to the abdomen rather than to the chest. Towards the close of the complaint, bronchitis usually supervenes, by which the patient is carried off. In some cases the disease gradually yields, when *contraction* of the thoracic parietes, on the side affected, can generally be perceived. This may even be ascertained by measurement.

Chronic pleurisy takes place principally in persons advanced in life. Those who are addicted to spirituous liquors, and have led irregular lives, chiefly suffer from it.

Medicine can do little to check the progress of such a disease, even though it should be detected by the skill of the auscultator at an early period. Repeated leeches, blisters, and other counter-irritants, would afford the best prospect of eventual benefit. Should hydrothorax have taken place to any great extent, paracentesis thoracis may be practised, rather with the hope of giving temporary alleviation to the breathing, than of permanently restoring the patient.

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* The doses and quantities specified in this work are calculated for an adult male of average strength of habit, except where otherwise stated.

III. ACUTE PERIPNEUMONY.

This disease has its seat in the cellular or parenchymatous structure of the lungs. It varies very remarkably in the mode of its onset. Sometimes a severe rigor is followed at once by symptoms of intense thoracic disease. At other times a cough or catarrh, with or without some feeling of depression or languor, shall have preceded even for several weeks the development of urgent symptoms. The usual evidences of peripneumony are, an obtuse pain, sometimes referred to the side, but more usually to the sternum, or epigastrium, and occasionally to the back or shoulder; impeded breathing, which is often particularly difficult in the recumbent posture; a moist cough; and fever, the character of which, however, is subject to great variety. Sometimes there is so little constitutional disturbance, so little febrile oppression, that the disease makes rapid advances before its nature is suspected; on the other hand, there is often great anxiety and alarm depicted in the countenance and manner. Sometimes the pulse is hard, but much more commonly it is oppressed, labouring, and full. Peripneumony is often attended by a puffiness of the features, lividity of the lips and under the eyes, eruptions about the lips, and occasionally headache; symptoms obviously referrible to the difficulty experienced in the transmission of blood through the lungs. In many cases the physician will notice an unusual heat of the breath. A dry and parched feeling of the whole surface is also to be accounted among the pathognomonic symptoms of active inflammation within the chest.

There is great variety in the progress of peripneumony, depending partly upon the intensity of the inflammation, partly upon the habit of the individual, whether plethoric or debilitated, and, of course, in some degree also, upon the nature and extent of the remedies employed for his relief. The following are the chief terminations of peripneumony.

1. *Copious and free expectoration.*—When appropriate

measures have been promptly taken and vigorously pursued, in a habit of body previously healthy, peripneumony terminates by what the old authors called *resolution*. That is to say, the viscid brown or rust-coloured expectoration, sometimes tinged with blood, which characterizes the active stage of peripneumony, is succeeded by a free and copious discharge of an homogeneous mucus. The vessels of the lungs are thus disembarrassed, and respiration becomes freer. Some critical evacuation shows itself at the same time, such as perspiration, diarrhœa, or a lateritious deposit in the urine. Convalescence is often long protracted, and interrupted by relapses.

2. *Pulmonary engorgement.*—Occasionally it happens that the engorgement of the vessels (the essential feature of all inflammations) is too great and extensive to admit of any relief. The patient dies, and on dissection the lung is found to be of a dark or livid colour. It no longer crepitates under the finger. When cut into, a bloody serum flows from it in abundance. It is heavier than natural, but does not actually sink in water. Occasionally its substance is softened, and gives way before the finger. This is pulmonary engorgement, or peripneumony proving fatal by the first mode.

3. *Hepatization.*—Coagulable lymph is sometimes thrown out by the inflamed vessels, giving rise to what has been called hepatization. In this state the lung is solid, inelastic, of the consistence and weight of liver. It sinks in water. It is an aggravated degree of pulmonic engorgement. The great difference between the two states consists in this:—a lung simply engorged may recover its healthy action quickly; an hepatized lung scarcely admits of being again restored to its purposes in the animal œconomy. It becomes the focus of fresh inflammation. Inflammation of hepatized lung is one of the forms of *consumption*.

4. *Vomica.*—Abscess in the pulmonary parenchyma is called a vomica, which may be either simple, or accompanied with tubercle. Laennec held, and the pathologists of this country concur with him in opinion, that vomica without tubercle is very rare. Whether this observation applies equally to other, and especially to hot countries, is doubtful. The diagnosis of the two forms of vomica is difficult, but important, because a large proportion of the cases of simple vomica recover. The pus of such an abscess is usually of a brown or yellow colour, and has the odour of rotten eggs.

5. *Purulent infiltration.*—In the highest degree of peripneumony the texture of the lung totally alters. At first it has an appearance like soft cheese, which gradually changes into purulent matter, oozing out in greater or less abundance, according to the progress which suppuration has made.

6. *Gangrene, or sloughy abscess.*—When peripneumony occurs in constitutions extremely exhausted, it occasionally terminates by gangrenous or sloughy abscess. I witnessed it in the case of a female, who had recently suffered from profuse flooding. This peculiar but rare form of termination to peripneumony can always be predicted by the gangrenous fœtor of the expectoration. It is not necessarily fatal.

Such are the usual terminations of parenchymatous pneumonia. *Serous effusion* into the air-cells of the lungs might have been added, but this will be considered under the head of bronchial inflammation, to which it more properly belongs.

The diagnosis between peripneumony and acute bronchitis is often difficult, but the student will bear in mind, that the two diseases run into each other by insensible degrees, and not unfrequently co-exist.

External characters of peripneumony.—Examination of the chest affords considerable assistance towards ascertaining the existence of peripneumony, its extent, and the progress making towards death or recovery. When a lung or portion of lung is the seat of acute inflammation, the sound emitted by percussion is dull; if the part still admit a portion of air, the respiratory murmur is changed into *crepitation.* This crepitant sound has been compared to that produced by rubbing the hair between the fingers. When hepatization is fully established, the ear applied to the chest perceives no trace of respiration; but on speaking, the voice resounds through the chest more loudly than in health, in consequence of the greater density of the communicating medium; and this is called *bronchophony.* When abscess has formed, a hollow cavernous sound is given out while speaking, which has been called *pectoriloquy.*

Prognosis.—The details now given will preclude the necessity of enlarging on the favourable and unfavourable signs in peripneumony. So much depends upon the circumstances in which the patient is placed, on his age, previous habits, and constitutional powers, and on the possibility of applying remedies effectually, that no general rules can be laid down. All that can be said is, that a large proportion of cases are susceptible of cure. The following are offered as hints towards prognosis.

In very young children the danger of peripneumony is greater than in adults, from the difficulty of obtaining blood, so as to produce an impression on the system. A copious and easy expectoration of mucus is the event most to be desired. The tinging of the sputa with blood need not create any particular alarm. Giddiness, lethargy, headache, delirium, and a swelled state of the tongue, indicate the difficulty experienced in the circulation through the head, and mark extreme danger. Blueness of the lips and coldness of the extremities denote that the supply of oxygen is insufficient for the wants of the system. Rigors and paroxysms of remitting or hectic fever, occurring in the progress of the disease, indicate a tendency to suppuration, either diffuse or circumscribed. Dyspnœa, giddiness, cough, and a permanently loaded tongue, continuing when the acute symptoms have subsided, without hectic or emaciation, indicate that a portion of lung is hepatized. The feelings of the patient will often indicate with extraordinary accuracy the boundaries of hepatization or abscess, and the probability of ultimate recovery. Nevertheless, it is by the combined effect of external examination, with a close and scientific reflection on the course and succession of symptoms, that the physician is chiefly to be guided in his estimate of danger.

Causes.—Peripneumony is, perhaps, the only inflammatory affection which occurs with equal frequency at every period of life, and under every variety of habit, circumstance, and situation. The infant, the adult, and the aged, are alike exposed to it. Its most common exciting cause is cold, and alternations of atmospheric temperature. It often supervenes on other diseases; such as measles, small-pox, catarrh, hooping-cough, and occasionally rheumatism and gout. The disposition to pneumonia is much increased by long-continued exercise of the lungs in speaking, by severe exercise of the body generally, and by its having before occurred. It is a frequent effect of that habitual indulgence in spirituous liquors, so common in the lower orders of this country. It prevails chiefly in the winter and spring seasons, like every other form of thoracic disease.

Treatment of peripneumony.—The principles of treatment in peripneumony are sufficiently simple; but the *extent* to which evacuation should be carried, having a due regard to the period of the disease, the age and circumstances of the patient, and the urgency of the symptoms, must be regulated by a habit of discrimination, that can be acquired only by clinical observation. In the acquisition of this knowledge, so essential to the safety of the patient, the following considerations may perhaps be useful.

Blood-letting.—In bleeding from the arm we possess a power of controlling pneumonic inflammation, the efficacy of which has been acknowledged in all ages; nor is it difficult to account for this, when we reflect that the morbid action occupies the branches of the pulmonary artery, with which the veins of the body generally are physiologically associated. Beneficial as bleeding is, much must of course depend on the period of the disease at which it is first practised, on the manner in which it is performed, the quantity drawn, and the frequency of its repetition. Above all, in estimating the probable advantage of blood-letting in any particular case, the natural strength of the constitution is to be looked to. Weakly habits will not bear the extent of blood-letting which is necessary to subdue a severe attack. Old persons and infants have not the power of regenerating blood so quickly as adults. Physicians have been struck, at all times, with the effect produced by taking the blood from a *large orifice*, in this and other urgent cases of local inflammation; and it certainly cannot be too strongly urged as an indispensable point in practice. The orifice should be such as to allow a pound of blood to flow in five, or at furthest in six minutes. The quantity to be taken at one time cannot be accurately defined. As a general rule it may be stated, that some effect ought to be produced on the system, before the orifice is closed; such as faintishness, or sickness, or diminution either of pain or of the strength of arterial contraction.

In all cases of pneumonia of the least severity, bleeding from the system must be repeated, and the principal circumstances by which the frequency of its repetition is to be regulated, are the state of the symptoms, and the appearance of the blood drawn. As expectoration of mucus is one of the means by which all inflammation within the chest is relieved, venesection, on several accounts, must be practised with great caution when free expectoration has taken place. Although the presence or absence of buff is not to decide our practice as to future bleeding, still, when present, it may often materially *assist* our judgment. If the blood, besides being buffy, be cupped, and *fringed* at the edges, we need have little hesitation in repeating the evacuation. Should the blood appear with a flat surface of buff, and the coagulum be loose, further bleeding may indeed be necessary, but it must be practised with great caution. In the pneumonia of infants, leeches and cupping may be substituted for bleeding at the arm. In adult cases, where, from some peculiarity of distribution, the veins of the arm do not afford the requisite supply of blood, cupping between the shoulders, to the extent of sixteen ounces, may be practised with good prospect of success.

Purgatives, diuretics, and expectorants.—Moderate purging, by castor oil, or the neutral salts, is a useful auxiliary in the treatment of pneumonia; but the advantages of purging are, upon the whole, much less obvious in thoracic diseases, than in those of the head or abdominal cavity. Any attempt to overcome decided thoracic inflammation by severe purging will always prove ineffectual, and often prejudicial. Refrigerant and diaphoretic medicines, as nitre and the liq. amm. acetatis, may be given with propriety. No great reliance can be placed on the medicines styled expectorant; but preparations of antimony, ipecacuanha, and squill, whether acting by virtue of a nauseant or expectorant quality, are often of use. The acetum scillæ, and the vinum antimoniale, merit a preference.

Calomel and opium.—The efficacy of mercury in the relief of peripneumony has been established by very ample proof. It is best adapted for those forms of peripneumony which are verging to hepatization. When that state has fully formed, there is no other remedy on which reliance can be placed for resolving the obstruction. The best forms for the administration of mercury in peripneumony are, pilula hydrarg. in the dose of three grains, made into a pill with two grains of squill, and repeated three times a day; or calomel with a small proportion of opium, James's powder, or ipecacuanha, in doses proportioned to the exigencies of the case. Where an enfeebled system precludes the possibility of bleeding, calomel should be pushed, so as even to affect the mouth. Opium uncombined is inadmissible in the active stages of peripneumony, on account of its tendency to check expectoration.

Blisters are unquestionably of the greatest importance in the treatment of peripneumony, but they should not be applied while the skin is dry, the pulse hard, and the blood cupped. It is not until the tone of the system has been lowered by venesection, that their good effects will become apparent.

Treatment of vomica.—If the inflammation has terminated in a vomica, copious bleeding is inadmissible; but the loss of a small quantity of blood is sometimes necessary to relieve the distension which its growth occasions, and the consequent difficulty of breathing. Advantage, too, will now be derived from the use of the tincture of digitalis. The strength of the patient must be supported by a light, nutritious diet, but wine is to be avoided.

The hepatized state of lung is to be combated by external irritants, such as an ointment, or embrocation, containing the tartarized antimony; by repeated blisters, low diet, occasional aperients; and lastly by mercurial alteratives, and diuretics.

CHAP. IX.

BRONCHIAL INFLAMMATION.

Prevalence of Bronchial Inflammation. Its generic characters. Its Subdivisions. Acute Bronchitis of Adults. External signs. Infantile Bronchitis. Subacute Bronchitis, or Peripneumonia Notha. Of Chronic Bronchitis. Morbid Appearances. Causes. Treatment of Bronchial Inflammation by antiphlogistic measures; Stimulants; Opiates; Expectorants; Blisters. Of the irritable Bronchia.

THE most frequent of all the diseases of cold climates is subacute and chronic inflammation of the mucous membrane of the bronchia, commonly known by the name of *winter cough*; and it cannot therefore but be considered a matter of great surprise, that the pathology of this disease should have been so long overlooked. By all the ancient writers, and by modern authors, up to a very late period, the disease was noticed, indeed, under the vague and unscientific denominations of tussis, catarrhus senilis, rheuma catarrhale, and bastard peripneumony; but their ideas concerning it were very confused and unsatisfactory. The nature of the peripneumonia notha of Sydenham, in particular, was a theme of endless controversy. Dr. Badham, in 1808, first wrote expressly on inflammation of the mucous membrane of the bronchia, and gave to it the appropriate name of bronchitis. His attention was too exclusively directed to the acute bronchitis, but his deficiencies have been supplied by the industry of later writers, and the pathology of the mucous membrane of the bronchia, may now be considered as having attained considerable precision.*

Generic character.—The general character of bronchial inflammation is drawn from the symptoms of cough and mucous expectoration; but dyspnœa, attended with wheezing, is nearly always present also, and with it may be observed a tendency to spasmodic exacerbation of all the symptoms. It is obvious, therefore, how closely allied are the symptoms of bronchitis to those of croup and peripneumony. To some, perhaps, it may not appear necessary to draw very minute distinctions between the inflammations of the same series of structures; still less to subdivide the cases of bronchial inflammation; but the practical physician will think differently. Keeping in view the extreme frequency of these affections, he will acknowledge the necessity of varying his mode of treatment, and of regulating it under the guidance of pathology. I shall offer no apology therefore for attempting to discriminate the different forms of bronchial inflammation which we meet with in practice. It is necessary to premise, that these distinctions are arbitrary, and made solely with a view to practice. A gradation may be traced in nature, from the most acute form of bronchitis, which attacks suddenly, and proves fatal, perhaps in a week, to that, the origin of which is imperceptible to the patient, and which he carries about him for a long series of years.

I shall consider bronchial inflammation under five aspects. 1. The acute bronchitis of adult life. 2. The acute bronchitis of infantine life. 3. Subacute bronchitis. 4. Chronic bronchitis. 5. Simple irritation of the bronchial membrane.

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* See "Treatise on Inflammation of the Mucous Membrane of the Lungs," by Charles Hastings, M.D. London, 1820. Also, Laennec on "Diseases of the Chest," translated by Dr. Forbes.

I. ACUTE BRONCHITIS OF ADULTS.

This is a rare but very severe form of disease. The most urgent symptom attending it is a sense of *tightness*, or constriction about the chest, generally referred to the sternum, but sometimes very unequivocally to the precise seat of disease. Respiration is hurried, and accompanied by wheezing in the throat, although the thorax can perhaps be expanded to its full extent. There is severe cough, with expectoration of matter, at first glairy like the white of egg, but by degrees becoming distinctly purulent. The uneasiness about the chest is greatly aggravated during the paroxysms of coughing. The general febrile symptoms are urgent. The pulse is frequent, but wants the hardness which characterizes pleurisy. Not unfrequently it intermits. Great anxiety is depicted in the countenance. The tongue is foul. Headache, sickness, and lassitude are also present. A remarkable feature in the worst forms of acute bronchitis is the suddenness with which the inflammatory symptoms are converted into such as indicate extreme debility, exhaustion, or collapse. Expectoration ceases. Rattling in the throat augments. The countenance becomes pallid or livid. Cold sweats pervade the surface. The pulse sinks, and the scene closes with delirium. The course of these cases sometimes does not exceed three days. On dissection, the bronchia are found to contain a large quantity of a thin frothy serum, much of which escapes by the nostrils. In the *peracute* cases, purulent matter is found.

External signs.—These will materially aid in distinguishing acute bronchitis from parenchymatous pneumonia. In the first place, it will be observed, that in simple bronchial inflammation, the ribs can be fully elevated. On percussion, the thorax emits a clear sound. When the ear is applied to the chest, the natural respiratory murmur gives place, first, to a hissing or *cooing noise*, arising from the constriction of the air tubes, and afterwards to the bubbling or *mucous rattle*, which gives evidence of the abundant secretion, through which the air has to make its way in its passage to and from the pulmonary cells.

Causes.—Acute bronchitis has its chief source in sudden alternations of atmospheric temperature. The causes that determine the severity of disease are little known, but we may presume that in this case it depends chiefly on pre-existing constitutional debility.

Treatment.—The urgency of the symptoms appears to demand the copious abstraction of blood, but the constitution seldom bears it well. Cupping glasses applied between the shoulders, so as to withdraw ten or twelve ounces of blood, afford in general more decisive relief. Saline draughts containing half a drachm of antimonial wine, with ten drops of the tincture of digitalis, should be given every four hours. A pill containing James's powder, calomel, and opium, may be given at the same time. Purgative draughts may be interposed. In the advance of the disease, a blister may be applied to the chest; and if, notwithstanding every care, the symptoms of rapid effusion and consequent mal-oxygenation of blood supervene, the last resource of medicine is the administration of the subcarbonate of ammonia and ether in union with the decoction of seneka.

II. INFANTILE BRONCHITIS.

One of the most frequent and fatal diseases of infantine life is the acute inflammation of the bronchia. It frequently arises idiopathically from cold and atmospheric vicissitudes, but it occurs also, in many cases, during small-pox, and as a sequela of measles and hooping-cough. Nothing is more worthy of note than the insidiousness of its approach. It may present at first the aspect of a common catarrh, with coryza. The appetite is perhaps unaffected, but the attentive physician will foresee danger, 1. In the rapidity of the breathing;—2. In the great frequency of the pulse;—3. In the pallor of the child's countenance;—4. In the drooping of the spirits;—and 5. In the restless and unquiet nights. Cough is not always a prominent symptom. Children do not expectorate, and therefore this avenue to diagnosis is closed.

The feeble and irritable frame of the child often falls a prey to the violence of this disease in the most unexpected manner. Perhaps within a few hours from the time when the parent takes alarm, the child becomes insensible, the lips livid, and suffocation ensues; or an epileptic fit occurs, in which he is carried off.

Treatment.—The means of relief are as follow:—1. Bleeding from the jugular vein, or the application of leeches or cupping-glasses to the chest. Where cupping can be *effectually* performed it should have the preference. A child of two years old will bear to lose two ounces and a half of blood. 2. The warm bath. 3. Antimonial wine given in the syrup of tolu, so as to excite full vomiting in the first instance, and afterwards a continued state of nausea. 4. Gentle aperients. 5. A blister to the chest. 6. A mild opiate, such as the syrup of poppies, to relieve the cough.

III. SUBACUTE BRONCHITIS OF ADULTS.

This species of bronchitis is attended with considerable febrile derangement of the system. It runs its course in about three weeks or a month, and is generally so severe as to confine the patient to bed for a part of the time. It is the *peripneumonia notha* of Sydenham, who has admirably described its symptoms and treatment. To those who have once suffered by it, it is apt to recur every year, and commonly in the winter season. It is attended by the expectoration of a copious puriform mucus, and respiration is performed with a wheezing noise. Occasionally, the cough occurs in paroxysms of great violence, terminating by the *vomiting* of food; and the disease then so closely resembles the hooping-cough, that, for a time, it is with difficulty distinguished from it; but the diseases are very distinct in their origin, termination, and treatment. This sort of *bastard* peripneumony is further attended with headache, and giddiness, aggravated by the exertion of coughing. To the predominance of these extra-thoracic symptoms, giddiness and vomiting, over the dyspnœa, and other more obvious symptoms of disturbed respiration, the disease is obviously indebted for its original but quaint appellation. Subacute bronchitis is to be treated on the following principles. It requires venesection two or three times, to the extent of ten ounces each time, and with intervals of two or three days. Aperient draughts are to be given occasionally, and much benefit is derived from the continued exhibition of saline and antimonial medicines.

IV. CHRONIC BRONCHITIS.

Bronchial inflammation of a low or chronic kind constitutes the great pathological feature of the majority of cases of chronic *winter* cough. The general symptoms of most importance are, the frequent pulse and the slightly furred tongue which attend it, pointing out that the constitution is in a state of febrile excitement. When pain is complained of, it is generally referred to the head or the iliac region, referrible, I believe, to the mechanical injury done to the bowels by the violence of the cough. A deep inspiration will almost always be followed by a fit of coughing, but it will seldom cause or aggravate pain. The difficulty of breathing is often very trifling when the patient is sitting quiet, but it is highly increased by any exertion of walking, more particularly by going up stairs, or ascending a hill. After such an effort the patient appears gasping for breath, and ready to faint from weakness. He can sometimes lie on both sides, but the horizontal posture generally increases dyspnœa; and consequently, in the severer forms and latter stages of the disease, he passes both his days and his nights in an easy chair.

The cough, in common chronic bronchitis, occurs in fits, lasting several minutes; and these, in a vast proportion of cases, happen in the morning when waking, or on going to bed at night. The irritability of the membrane is obviously increased in this disease; and exposure of the skin to the cold air proves, by sympathy, a source of irritation. In like manner, a change of weather, or the inhalation of smoke or vapours, or the taking in of food, brings on a fit of coughing. The matter expectorated varies very much in appearance, but still more in *quantity*. Occasionally it assumes a muco-purulent character, but its ordinary appearance is simply mucous, sometimes thick and ropy, sometimes thin and frothy, and occasionally in such enormous quantity as to excite astonishment. I have seen three pints of a thin mucus brought up in twenty-four hours, and that without any other very urgent symptom. Attention should always be paid, as to whether the expectoration be easy or difficult.

Coldness of the lower extremities is generally complained of, as was long ago noticed by Hoffman. The patient becomes weak, and makes great complaint of the languor and lassitude which oppress him. As the disease advances he loses flesh, and a disposition to phthisis is often suspected. In the early stages of all severe bronchial affections, and in the latter periods of slighter ones, the functions of the stomach and bowels are impaired. There is loss of appetite, a weak digestion, flatulence, an unpleasant taste in the mouth in the morning, and costiveness.

The duration of this form of bronchial inflammation is very various. It has very little tendency to wear itself out, and, if suffered to run its own course, continues often during the whole winter, and yields only to the change of season. It is not a disease of danger, until by frequent recurrence it has worn down the system, and either merged in peripneumony, or gradually led to the deposition of tuberculous matter in the lungs.

Catarrhus senilis.—Bronchial inflammation is sometimes attended, particularly in old people, with those marks of loss of tone in the system which pathologists have generalized under the term *asthenia.* This form of the affection has long been known by the name of catarrhus senilis. It is marked by profuse expectoration, a feeble and languid pulse, a disposition to sleep, and extreme weakness of the limbs. It proves fatal to many old people—sometimes by suffocation, at other times by exhaustion, and often very unexpectedly. Chronic bronchitis is particularly tedious and severe in such persons as have led irregular lives, and indulged freely in spirituous liquors; but in them it is generally associated with *hepatization,* or some other form of disorganization of the substance of the lungs.

Morbid anatomy.—The mucous membrane of the bronchia, after being long subject to chronic inflammation, appears discoloured; sometimes of a vivid red colour, sometimes inclining more to purple. Its structure is often thickened, and not unfrequently the surface of it is pulpy. Mucus is generally found, to a considerable extent, filling the bronchia and air-cells. Ulceration is rare. When ulcers do appear, they are always superficial and generally small. In some cases the bronchia undergo a peculiar disorganization under repeated attacks of chronic cough. One or more of the bronchial tubes become dilated. A bronchus of the size of a straw dilates to that of a goose-quill, and the lining mucous membrane becomes softened or thickened. These disorganizations aggravate the symptoms, and either create habitual dyspnœa, or increase the liability to relapse.

Causes.—Chronic bronchitis is, certainly, for the most part, a primary disease, and attributable, in a vast proportion of cases, to cold and moisture. I have observed, that foggy weather is very apt to bring it on. But it frequently also supervenes upon other diseases, both of an acute and chronic kind; such as the febrile eruptions, chronic cutaneous affections, and diseases of the abdomen. The connection of bronchitis with disordered conditions of the abdominal viscera has long been known. Worms have been observed to create cough. Dyspepsia and diseases of the liver are often attended by the common symptoms of chronic bronchitis. In some cases this connection may be accidental; but in many it is, I believe, strictly *sympathetic*;—that is to say, the disease of the bronchia can be relieved only by relieving the abdominal affection. This relation, under disease, between the viscera of the thorax and abdomen, whatever be its precise nature, is mutual. If abdominal disease creates cough, so, in like manner, does obstinate cough cause weakness of stomach and indigestion. This is one of the great sources of difficulty in the management of bronchial affections.

Treatment.—The treatment of chronic bronchitis must be regulated by reference, partly to the constitutional, and partly to the thoracic symptoms. In those cases which approach to the character of subacute inflammation, antiphlogistic measures of greater or less activity are always to be resorted to. When the cough occurs in paroxysms of extraordinary length or violence, or when there is a tensive pain of the forehead, or of the iliac region, blood must be taken from the arm. In very severe cases, a repetition of small blood-lettings is necessary to overcome the disease. In cases of less urgency, it will be sufficient to direct the following draught to be taken three times a day:—

℞ Potassæ subcarbonatis, ℈j.
Succi limonum, ℥ss.
Vini antimonialis, ♏xv.
Tincturæ hyoscyami, ʒss.
Sacchari albi, ℈j.
Aquæ fontis, ℥i. Misce.

The state of the bowels requires much attention. Many cases of cough depend *entirely* upon fullness of blood, and yield at once to active purgatives. It was a favourite maxim with the old physicians, that purgatives are beneficial only in stomach (or sympathetic) coughs, and that the true pectoral coughs are more relieved by diuretics. This is true to a certain extent; but in genuine bronchitis purging is very requisite, and of all the forms of purgative medicine, senna, with salts and manna, is the best adapted for chronic cough:—

℞ Infusi sennæ compos. ʒxj.
Magnesiæ sulphatis, ℥ss.
Mannæ, ʒiij. Misce.

Where the system is much debilitated, the tongue clean, and no thirst present, advantage will be derived from the exhibition of the stimulant gum resins, ammoniacum, myrrh, and the balsam of tolu. In this state of the system, narcotics, more especially opium, are not only useful, but often quite indispensable. They allay that irritation of the membrane which would otherwise prevent the patient from getting sleep. They are best given in a full dose at night. Acids are of some use, apparently by their power of dissolving, or rather of detaching the thickened mucus. They are commonly said to *cut the phlegm*. The sulphuric and acetic acids are usually employed for this purpose. Where the irritability of the membrane is very great, with little constitutional disturbance, demulcent mixtures are useful, with the addition of a suitable expectorant. What the world call *cough medicines* are combinations of a demulcent, an expectorant, and an anodyne; and their efficacy in the relief of chronic cough is very great. Every practitioner has his favourite recipe, assuming the several forms of draught, mixture, pill, linctus, or lozenge. One of the most approved formulæ is the compound squill pill of the Pharmacopœia, which has for its active ingredients squill, ammoniacum, and ginger. The following combination is in common use:

℞ Oxymellis scillæ,
Mucilaginis acaciæ,
Syrupi tolutani, *sing.* ℥ss.
Tincturæ opii, ♏xx. Misce.
Sumat ʒj frequenter indies.

The almond emulsion is frequently employed, either alone or in combination; as thus:—

℞ Misturæ amygdalæ, ʒx.
Vini ipecacuanhæ, ♏vj.
Syrupi papaveris, ʒj. Misce.
Fiat haustus ter die sumendus.*

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* Other formulæ for the employment of expectorant medicines may be found in the Appendix.

An useful cough pill may be prepared in the following way:—

℞ Extractii conii, ʒss.
Pulveris scillæ, gr. x.
——— ipecacuanhæ, gr. v. Misce.
Divide in pilulas decem. Sumat j ter die.

Some of the formulæ for cough pills contain a proportion of calomel, and its employment in small doses undoubtedly contributes to relieve the breathing in obstinate cases of chronic bronchitis. It will be found, indeed, in all cases of dyspnœa unattended by corresponding fever or cough, that the exhibition of three grains of calomel in a pill affords very effectual relief. Five grains of Plummer's pill, taken at bed-time, is sufficient in slighter cases. When the tone of the stomach is impaired by the long continuance of the disease, bitters are of considerable service, and may be advantageously united with the narcotic and expectorant medicines already recommended, as in the following formula:—

℞ Infusi calumbæ, ʒss.
Aquæ carui, ʒvj.
Sodæ carbonatis, gr. v.
Tincturæ scillæ, ♏xv.
——— humuli, ʒss. Misce.
Fiat haustus ter die sumendus.

Coughing is an act in which the diaphragm is mainly concerned, and hence it is that a gentle stimulus to the stomach so often aids expectoration.

Blisters are useful in almost every form of winter cough, when applied judiciously. The symptoms, which in an especial manner call for their employment, are a cold skin, a languid circulation, and an oppression in the breathing. An uniform moderate temperature, warm clothing, and a light diet, are quite indispensable. If the disease prove very obstinate, a change of air should be directed; for it may then be considered as kept up, in some measure, by habit. Warm weather has a very striking influence in many cases of obstinate chronic bronchitis; and therefore when the disease has recurred several times, and is brought on by slight vicissitudes of temperature, it may even be proper to recommend removal to a warmer and steadier climate.

V. IRRITABLE BRONCHIA.

There is a peculiar form of bronchial affection unattended by any symptoms of disordered constitution. The patient, on first waking, is attacked with a severe and loud fit of coughing, which continues to harass him for half an hour after rising. It recurs occasionally during the day. It is attended with little or no expectoration, and appears to consist chiefly in an *increased irritability* of the membrane. That it is allied to a state of inflammation is probable from this, that the affection can always be traced to cold. It is not permanently benefitted by any plan of treatment which I have been able to devise, except change of air. The hydrocyanic acid, given in doses of three drops twice a day in lac amygdalæ, has occasionally proved useful.

CHAP. X.

CONSUMPTION.

General character of consumptive ailments. Pulmonary Tubercle. Its origin and nature. Its connection with Scrophula. Of Tubercular Cachexia, independent of hereditary taint. Its causes. Progress of the symptoms in Consumption. Phthisis incipiens and confirmata. Characters of Hectic Fever. Modes of Death in Consumption. Of Pneumothorax. Its origin and diagnosis. Morbid anatomy of phthisis. External signs. Prognosis. Principles of treatment in the incipient, inflammatory, and ulcerative Stages of Consumption.

Chronic inflammation of the *substance* of the lungs is so uniformly connected with wasting of the body, as to have obtained for itself the distinguishing appellation of phthisis, *consumption*, or *decline*. Its amazing prevalence, and almost uniform mortality, entitle it to the fullest attention; but independent of this, it is a subject which involves many curious pathological speculations. Consumption is a febrile disease, but the character of the accompanying fever differs from any thing we have yet examined. It is the chronic inflammation of a cellular structure, but that structure had previously been diseased. It occurs, for the most part, in that peculiar habit of body (the *scrophulous*) which is characterized by a delicate organization of blood-vessels; and it exhibits therefore, in all its stages, a strong disposition to hæmorrhage.

Cough with expectoration, difficult breathing, and wasting, are the *leading* symptoms of consumption; and pathology would bear us out in applying the term at all times to such a combination of symptoms. But physicians have generally agreed in restricting it to those cases where the symptoms arise from *ulceration of disorganized lungs*, the principal disorganizations being hepatized induration, and tubercle. There are other morbid conditions of the respiratory organs, however, which may, and frequently do, give rise to this group of symptoms. They are, first, chronic inflammation and ulceration of the larynx, trachea, and bronchia; secondly, chronic inflammation of the pleura; and thirdly, vomica, the sequel of acute inflammation in lungs previously *sound*. Each of these forms of thoracic disease have been already noticed (pages 220, 233, 235, 245), and they are only referred to in this place, that the reader may have before him, in one view, a sketch of the general pathology of consumptive disorders.

Of the two principal forms of consumption, viz. ulceration of *hepatized* lungs, and ulceration of *tuberculated* lungs, it is unnecessary that I should treat separately. They give rise to nearly the same train of symptoms, they are equally dangerous, and they are not unfrequently found to co-exist. Of the former it is sufficient to say, that it is the occasional consequence of pneumonic inflammation and repeated catarrhs in any habits, but more especially in persons indulging freely in the use of ardent spirits. It may occur therefore at all ages, but is most common in the middle period of life; viz. between the ages of thirty and fifty.

The great and peculiar feature of phthisis pulmonalis is its connection with tubercle of the lungs; and before the phenomena of the disease, the diagnosis, or prognosis, can be properly understood, the nature of tubercle must be explained.

PULMONARY TUBERCLE.

Tubercles are rounded, firm, white bodies, varying from the size of a pin's head to that of a garden pea, frequently found interspersed through the whole substance of the lungs, but most usually met with in its upper and posterior parts. Frequently they occur in clusters. In their earliest state they are semitransparent, and of cartilaginous hardness. No blood-vessels can be traced in them, even by a microscope, and the finest injection does not penetrate them. They are situate, not in the air-cells, but in the proper cellular texture of the lungs, and are without any cyst.*

Even in this state, tubercles create a degree of impediment in the breathing, by occupying a considerable space in the body of the lungs. They prevent the free transmission of blood through that vascular organ, and occasion, therefore, a rupture of some of the smaller vessels, and consequent spitting of blood, when by any cause the impetus of the blood is increased. But these are only a small part of the evils which result from the presence of tubercles. Though no blood-vessels can be traced in them, they are susceptible of changes, the first of which is the softening of the hard granulation, and its conversion into a white capsule containing pus, or a soft cheesy matter called the crude tubercle. A cluster of these coalescing forms an abscess, and the large half filled abscess constitutes a cavern. The parietes of the cavern secrete pus, and portions of them occasionally slough away. The internal surface of the bronchia communicating with the abscess, or cavern, appears red and inflamed. The contiguous portions of the substance of the lungs are differently affected in different cases. Sometimes their texture is unaltered, but more commonly it is rendered red, solid, and impervious to air. The smaller blood-vessels are commonly destroyed; and the larger, before they reach the abscess, are wholly, or partially, filled with a kind of fibrous substance, by which severe hæmorrhagy is prevented, even though a great extent of lung be injured. It is imagined, that, upon an average, three-fourths of the substance of the lungs are rendered unfit for respiration in the progress of consumption, before the patient sinks.

Tubercles have been occasionally found in the lungs of children at a very early age, but they are not commonly met with until a short time before the completion of the growth of the body. In a few cases they appear to have been formed at a very advanced period of life. They are morbid depositions by the vessels of the lungs; and it is certainly an important object to determine, if possible, the manner in which their formation takes place, and the circumstances which give occasion to it. On these questions, however, pathologists are much divided. Some maintain, that tubercles are deposited by a peculiar action of vessels, altogether distinct from inflammation, that their formation is unattended by the usual accompaniments of inflammatory action, and that in fact inflammation is the consequence rather than the cause of tubercle. Others contend that tubercles (more especially as they occur in the lungs) are simply the result of a low degree of common inflammation; and this opinion is corroborated, first, by finding them associated with the acknowledged *effects* of inflammation, viz. suppuration, adhesion, and hepatization; secondly, by observing that when tubercles are found, independent of such avowed sequelæ of inflammation, their appearance has been preceded by the ordinary symptoms of catarrh, or peripneumony.* The facts and arguments adduced by the respective supporters of these doctrines, are such as to prove irresistibly that tubercular deposits may take place in both ways, nor is there any thing inconsistent with sound pathology in such an admission.

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* On this subject consult Dr. Stark's Works, 4to. 1788 (or Medical Communications, vol. i. page 359); Dr. Baillie's Morbid Anatomy; and the works of Laennec.

All parties are agreed in the important fact of the intimate connection of tubercle in the lungs with the *scrophulous* diathesis. This appears in the hereditary transmission of phthisis in scrophulous families, and in the frequent association of phthisis with other marks of the scrophulous disposition. It is illustrated by the analogy which subsists between the progress of inflammation in a tubercle, and in a *gland* affected by scrophula. In both it is of the same *chronic* kind, tending to the formation of the same sort of thick curdly pus. It is brought on in both by the same causes, and relieved (if relieved at all) by the same means.

Tuberculous cachexia.—The habit of body in which tubercular depositions are liable to occur, has recently been described by Dr. Clark, under the appropriate title of the tuberculous cachexia.† The causes which give rise to it in persons not hereditarily predisposed, have been largely commented on by him and others; and the following is a summary of the opinions now commonly entertained on this subject. Improper diet, impure air, deficient clothing, want of due and wholesome exercise in the open air, uncleanly habits, excessive labour of body, and too intense application of the mind to study or business, are the causes which, singly and combined, predispose the body to disease, and cause the vessels of the lungs to throw out that unhealthy deposit which we call tubercle. The tubercular diathesis being thus formed, very little is wanted to call it forth. In early life it is developed by the occurrence of small-pox, measles, hooping-cough, remittent fever, or accidental exposure to cold and wet. At a more advanced age we see the same thing effected by abuse of spirituous liquors, by fever, by a sudden attack of catarrh, bronchitis, or pleurisy. Some authors contend that abdominal affections, especially dyspepsia and liver disease, contribute materially in adult life to foster and call into activity the latent tuberculous disposition. That well-marked dyspeptic ailments frequently accompany and mask the early symptoms of consumption is undoubted. To this complication or form of the disease the name of phthisis dyspeptica has been given. Whether the abdominal disease has any, and if any, what degree of influence in the production of the thoracic disease, are questions, however, which pathologists have not yet satisfactorily decided.

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* On this subject, see Dr. Alison on "The Pathology of Scrophulous Diseases," in the Transactions of the Med. Chir. Society of Edinburgh, vol. i.

† Dr. James Clark on "Tubercular Phthisis," in Cyclopædia of Practical Medicine, vol. iv. page 268.

Symptoms of phthisis.—The symptoms of tubercular consumption are next to be explained, and they are sufficiently uniform to admit of a precise detail.

A sense of tightness across the chest and of internal heat, with a short tickling cough, are among the first symptoms that mark the approach of a decline. The patient is languid, and has the feeling of slight pains in some part of the chest, when he ascends a flight of stairs, or takes any considerable exercise. The pulse will commonly be found, even at this early period of the disease, somewhat accelerated. These symptoms, however, being very slight, are often overlooked, both by the patient and his friends, until the occurrence of *hæmoptysis*, which may be said to characterize the first stage of phthisis pulmonalis, with as much certainty as purulent expectoration does the second. The spitting of blood recurs at irregular times and in variable quantities. By degrees, the cough becomes more and more troublesome. A fixed pain in some part of the thorax, more particularly its clavicular portion, cr about the pit of the stomach, is now complained of. Respiration is hurried, and the patient unable to expand the chest, even in the slightest degree. There is difficulty in lying on one or other side, or sometimes on the back; and, at length, the nature of the disease is put beyond doubt by the occurrence of *purulent expectoration* and *hectic fever*.

The expectoration of a thick pus, generally in the form of globular lumps, of a straw colour, occasionally tinged with blood, and always more or less mixed with mucus, is the characteristic feature of consumption; but perhaps too much stress has been laid upon the necessity of distinguishing in pulmonic diseases between the different *kinds* of expectorated matter. An extensive observation of disease will show, that its appearance varies extremely, not only in different individuals, but even in the same individual on different days, and different times of the day; and that its qualities may alter, without materially altering the danger, still less the nature of the disease. Portions of calculous matter are sometimes expectorated. To this variety of the disease the name of phthisis calculosa has been given. The circumstance is neither theoretically nor practically important.

Hectic fever (the other diagnostic mark of confirmed phthisis) is the fever of irritation and weakness.

We have already noticed (page 29) its *generic* character; but it was reserved to this place to describe in detail the phenomena of adult hectic. These, under all the circumstances of its origin, whether idiopathic or symptomatic, are extremely uniform.

HECTIC FEVER.

Hectic fever is a remitting fever, having its exacerbation between five and six o'clock in the afternoon, at which time rigors occur, lasting about an hour, and succeeded by an increase in the quickness of the pulse, the heat of skin, the thirst, general uneasiness, and restlessness. About ten o'clock at night the sweating begins, which is the natural crisis of the hectic paroxysm. The patient then gets some sleep, but the sweating for the most part continues; and when he wakes in the morning, he finds himself bathed in perspiration. It is a remarkable circumstance, that this disposition to sweating is sometimes local, being confined, for instance, to the head and neck, or to the inferior extremities. These are the *colliquative* or weakening night sweats, which afford so striking a characteristic of hectic fever.

The pulse in this form of fever is always very frequent, averaging 120, but frequently it will be found for weeks together as high as 144. The skin is hot, but not in proportion to this exhausting rapidity of the pulse. The vessels of the adnata lose whatever redness they may have had in health, and the eye becomes of a leaden or pearly hue. The countenance is pale in the morning; but towards evening, when the febrile exacerbation occurs, the cheeks exhibit that circumscribed redness, known by the name of the *hectic flush*. The same phenomenon may sometimes be seen on the hands. The urine, from the very first, is high-coloured, and deposits, on cooling, that copious branny red sediment upon which the older pathologists laid so much stress.

Under common circumstances, the functions of the stomach are, in hectic, but little impaired: the appetite may even continue good. There is not much thirst, except towards night, or what results from the medicines taken; and the bowels are at first unaffected. Yet with all this, emaciation takes place, and often proceeds rapidly, and to an extreme degree. This is first observable in the face, which becomes thin and long, and the eyes appear sunk in their orbits. Closely connected with the emaciation is the loss of muscular power, which also proceeds to a great extent, and is frequently the earliest prominent symptom of this disease.

A circumstance well deserving of attention, as pointing out a striking difference between hectic and idiopathic fever, is the little disturbance which takes place in the functions of the brain. Headache does not always occur during the periods of exacerbation, and it is seldom present at other times. Delirium is very rare, except perhaps for a few hours before the patient's death. Even this is not constantly observed, for in many instances the senses remain perfect even to the last gasp of breath which is drawn. A degree of languor generally prevails, but in a large proportion of cases the mental faculties continue quite unimpaired throughout the disease. I have sometimes even thought, that a præternatural vigour of mind was perceptible while the body was suffering under the most exquisite form of hectic. One exception must be made, applicable at least to that which attends pulmonary consumption. On the prospect of his own recovery, the judgment of the phthisical patient is nearly always erroneous. The most obvious indications of danger are overlooked; and, full of hope, even to the last, he is busied in the anticipation of approaching convalescence.

The only other peculiarity of hectic fever which I have to notice, is the tendency which exists, in its latter stages, to an affection of the mucous membrane of the ileum. This is indicated by colliquative diarrhœa, the occasional appearance of blood in the motions, and a preternatural redness and *tenderness* of the tongue, followed in most cases by the appearance of aphthæ in the mouth. On dissection, especially if such symptoms have been present for any length of time, inflammation and ulceration of the ileum of a peculiar character are met with, but not so constantly as to warrant the belief, that in all cases these symptoms depend on an *inflammatory* state of the intestines. Under common circumstances of colliquative diarrhœa, the bowels are merely *irritable*.

Such are the characters of hectic fever; and they constitute, along with purulent expectoration, the chief features of the advanced stages of pulmonary consumption. A few other symptoms, occasionally observed at the same time, require separate notice. Acute pleurisy sometimes supervenes. At other times the peritonæal surface of the liver takes on a subacute inflammation.

I have already (page 221) alluded to the laryngeal complications witnessed in the latter periods of consumption; viz. hoarseness, sympathetic pain, and chronic inflammation, with ulceration, constituting the variety termed phthisis laryngea. Another circumstance worthy of note is the concurrence of dropsy, particularly dropsy of the cellular membrane. Œdema of the feet and ancles is sufficiently decisive of it, but it frequently extends also to the legs and thighs. This has commonly been attributed to *debility*—to that same relaxation of the capillaries to which we are in the habit of ascribing colliquative perspirations. But this theory is doubtful, because, in many cases, where an equal, or even a greater degree of muscular weakness prevails, there is no appearance of dropsical effusion. It probably has its origin in some impediment to the current of blood through the pulmonary artery, disturbing directly the functions of the right side of the heart, and indirectly those of the venous system throughout the body.

Modes of death in consumption.—In this disease death may take place in four modes :—1. By *exhaustion*. This is the most common. The patient is worn out by the discharge of pus, and the colliquative sweating and purging. The supply of blood is insufficient for the wants of the system, and the heart ceases to beat. Palpitation, faintings (often called *spasms at the chest*), and extreme weakness, precede the fatal event. The patient dies with the senses entire.—2. By *hæmoptysis*. A large blood-vessel gives way, in consequence of ulceration, and in the exhausted state of the patient, the ensuing hæmorrhage proves instantly fatal.—3. By *excessive secretion, and consequent suffocation*. Purulent matter accumulates in the bronchial tubes faster than the patient can expectorate it. The result is, the dead rattles, blueness of countenance, cold extremities, and the other evidences of mal-oxygenated blood. Delirium here precedes the fatal event.—4. By *pneumothorax*, or *thoracic tympanitis*. This event, though rare, involves several novel and interesting questions in pathology, and merits therefore a more detailed investigation.

PNEUMOTHORAX.

Very little was known regarding this singular state of thoracic disease until lately. For our present notions concerning its origin and diagnosis, we are chiefly indebted to the labours of Laennec. Pneumothorax is the accumulation of air in the cavity of the pleura. Its usual origin is as follows. A tubercle forms near the surface of the lung. In the process of ulceration, aided by the force of coughing, the pleura gives way at that part, and subsequently, at each successive inspiration, a portion of air escapes, through the opening thus made, into the general cavity of the chest. The result depends on the degree of adhesion which may previously have taken place between the two surfaces of the pleura. If the lung be free from adhesion, it is compressed by the air thus escaping, and respiration rendered more and more laborious. If the accident happens on the left side, the heart may be pushed over towards the right. Whether the presence of air in the cavity of the chest produces any other than the mechanical effect of compression, is not yet accurately ascertained. It has been said to occasion pleuritic inflammation.

The value of external examination of the chest is strikingly displayed in the diagnosis of pneumothorax. The internal or general signs of such an occurrence, are, a sudden and great increase in the dyspnœa, occasionally with pain, but always with extreme anxiety. The external signs are much more precise. When the thorax of one side has become tympanitic, the intercostal spaces are distended. The sound elicited by percussion is clear and hollow. When the ear is applied to the chest, no respiratory murmur is heard, but in its stead a sound compared to that of a pin falling into a metal cup, and heard when the patient speaks. This has been called *metallic tinkling*. Whenever, therefore, in the progress of phthisis, a sudden accession of dyspnœa occurs, the chest should be examined with a view to determine the existence of pneumothorax. In most cases it proves fatal, and generally in the course of two or three days; sometimes even in twelve hours. It admits of temporary relief by the operation of paracentesis.

Such is the usual origin and course of pneumothorax. It has been said that it may arise (independent of external injury) in two other modes:—1. By secretion from the pleura.—2. By putrefaction of purulent matter effused into the cavity of the chest. There are no sufficient grounds, however, for adopting either of these opinions.

Morbid anatomy of phthisis.—The sketch already offered of the origin and progress of tubercular formations in the lungs will preclude the necessity of describing at length the appearances found on dissection of phthisical bodies. In general the lungs appear disorganised in various degrees in various parts. In the upper lobes we find excavations, in the middle portions crude tubercles, and in the lowest part granulations presenting no trace of opaque matter. The upper and back part of the lungs being in general the earliest seats of tubercular degeneration, present, at the close of the disease, the most extensive ravages. The left side is more frequently affected than the right, an observation first made by Dr. Stark. Some weak and irritable constitutions will sink under a very small extent of pulmonary disorganization; others will drag on a miserable existence even for years, when, upon dissection, so large a portion of the pulmonary parenchyma is found destroyed, or occupied with tuberculous infiltration, and so few traces are left of its original structure, that it is only a matter of astonishment how life could have been supported.

External signs.—Consumption is a disease so strongly marked in its features, that its earliest indications are often recognised by friends before the advice of the physician is demanded. There are occasions, however, when he is glad to avail himself of every assistance, not merely in detecting the disease, but in ascertaining its extent. For this purpose he will have recourse to those external signs which are cognizable by the touch and ear.

When any considerable portion of the lung is deeply studded with tubercle, and the surrounding tissue rendered, by slow inflammation, impermeable to air, the sound elicited by percussion is dull. The comparative freedom with which the two sides of the chest can be elevated indicates also, to a certain degree, the extent and chief seat of the disease. When the ear is applied to the chest, the healthy murmur of respiration gradually diminishes as the lung ceases to perform its functions; while the resonance of the voice through the chest is *increased* in proportion as the pulmonary substance indurates, by which sound may be transmitted, or caverns form, in which it may reverberate. To these modifications of vocal resonance the terms bronchophony and pectoriloquy have been applied.

Prognosis.—It is melancholy to reflect how very little this disease is under the control of medicine; and before I can enter upon the consideration of the principles which are to guide us in its treatment, I must record the failure of every plan for its effectual cure, which human ingenuity has yet devised. The common observation of the world has sufficiently stamped its character as the most destructive disease in this island; and, in its confirmed stage, almost hopeless. The deaths throughout England by consumption are calculated at one in five, and amount therefore annually to about 55,000. They constitute *one-fourth* of all the deaths in London. The duration of the complaint it is scarcely possible to define with any accuracy. A galloping consumption is one that proves fatal in a month. A lingering consumption extends to two years. The average may be stated at nine months. Out of 314 cases recorded by Messrs. Louis and Bayle, 162, or more than one-half, terminated within that period, and the greatest proportion of them between the fourth and ninth month. In many instances there are threatenings of the disease for several winters before the symptoms assume any degree of urgency. They are often checked by the return of mild weather, but perhaps even in a still more remarkable manner by pregnancy. The months of December and January are observed to be particularly fatal to phthisical patients.

TREATMENT OF CONSUMPTION.

We may divide consumption into three stages:—1. That of dormant tubercle. 2. That of inflammatory action. 3. That of ulceration. The appropriate treatment in each will be considered separately.

Treatment of the dormant tubercle.—The first principle which it appears of importance to inculcate is, that in phthisis active measures cannot be pursued; and that this must be compensated by a strict attention to a number of lesser circumstances, which in many other diseases may be neglected without detriment to the patient. We are to bear in mind, that consumption, though an inflammatory affection, is principally characterized by its occurring in a *scrophulous*, which is commonly a weak habit of body, and in an organ loaded with tubercles, the inflammation of which runs rapidly into suppuration. The chief objects of consideration, therefore, are, how these tubercles may either be absorbed, or kept in a quiescent state; in what respect their treatment, when inflamed, differs from that of common pneumonia; and how the constitution may be best supported in the protracted suppuration to which their inflammation leads. In the treatment of phthisis much nicety is required. On the one hand, we have to combat the actual presence of inflammation; and to bear in mind, on the other, the danger of exhausting the constitution.

The question has been frequently agitated, whether tubercles can be absorbed, and by what medicines that desirable object can be effected. Emetics have been often recommended for this purpose, especially the sulphate of zinc. Others have confidence in the *deobstruent* virtues of the muriates of baryta and lime. The influence of such medicines is very trifling. The repeated exhibition of emetics may even prove hurtful. Upon the whole, we must conclude, that though tubercles have doubtless in some cases been dispersed, yet this effect appears to be as completely out of our control, as the manner of their formation is beyond our knowledge. All that can reasonably be expected from medicine, is to keep them in a quiescent state; and this is to be done by a strict attention to diet, air, exercise, and by avoiding all those causes which we shall notice hereafter, as likely to bring on hæmorrhagy of the lungs.

Diet.—The diet of a person who has shown a disposition to phthisis, should be nourishing, and calculated to afford strength to the system, without creating a disposition to febrile excitement. For this purpose, farinaceous preparations of all kinds with milk should be recommended. Animal broths, with fish and a proportion of plainly dressed meat, may also be allowed; but all highly-seasoned dishes, and food which is difficult of digestion, fermented and spirituous liquors, are to be strictly prohibited. Nothing appears more likely to correspond in every respect with this *indication of cure*, than the breathing a free and pure air; and its advantages in consumptive cases are generally acknowledged. The air of a large town, loaded as it is with smoke and effluvia, has long been considered hurtful. The patient should be sent therefore to the country, and, if possible, a situation selected which is sheltered from cold bleak winds, and where the soil is gravelly.

Regimen.—With the enjoyment of a free and pure air, moderate exercise should also be advised, and where the circumstances of the patient admit of it, horse exercise should obtain the preference. A sedentary mode of life, and close application to study, or business, have frequently proved the exciting cause of the disease; partly, perhaps, by the bent position in which the thorax is so long kept, but principally from the want of that due exercise which is essential to the preservation of the health and strength of the body. With the view of affording, at the same time, both exercise to the body and relaxation to the mind, a journey during the summer months is particularly useful.

Change of climate.—To those whose circumstances will admit of it, we should advise the removal to a warm climate. Consumption, though far from being uncommon in the southern countries of Europe, is, upon the whole, less frequent there than in cold climates; but between the tropics it is a disease nearly unknown. This consideration would induce us to prefer the Bermudas, or even the West India Islands, as a residence for consumptive patients. But even the South of Europe, particularly the climate of Naples, holds out many advantages; and a timely removal thither, with regularity of living, may be recommended to those who are threatened with consumption, with a fair prospect of overcoming the tendency to the disease.

2. *Treatment during the inflammatory stage.*—When hæmoptysis has occurred, and when the local and constitutional symptoms give evidence that active inflammatory action is going on in the lungs, measures of more activity must be pursued. Bleeding from the arm has been recommended as a means of putting an immediate check to the progress of the disease; but this is a vain hope; and such a measure must, therefore, at all times, be resorted to with caution, and a due consideration of the habit of body in which consumption occurs. Where the pulse is hard and contracted, and the urgent pain and cough, with a loaded state of tongue, indicate the existence of pleurisy, the loss of six or eight ounces of blood from the arm is beneficial. Under almost all other circumstances, the application of leeches to the seat of pain is preferable.

Blisters afford great relief to the cough and tightness across the chest, and they may be repeated with great advantage through the whole course of the disease. Rubefacient plasters, such as the empl. picis burgund. compos. (either alone, or mixed with a small proportion of blistering ointment) may be substituted. I have never seen sufficient benefit derived from issues and setons to warrant me in recommending them. Active purging is inadmissible, but an occasional dose of castor oil, or of rhubarb, will be found indispensable. Mild diaphoretic and expectorant medicines may be exhibited occasionally through the day. Attention to the state of the skin, indeed, is very essential in this disease, as in every other in which the lungs are implicated. An uniform temperature of the body should be promoted by warm clothing. In some cases it may be necessary, during the whole winter, to confine the patient to apartments which are of a regulated temperature.

In consumptive complaints digitalis is universally employed. That its powers have been extravagantly over-rated, I cannot doubt, but it appears in some cases to quiet the cough. The dose of this medicine should never be carried to such an extent as materially to affect the pulse.

3. *Treatment in the stage of ulceration.*—In the confirmed

stages of consumption, it is necessary to support the strength of the system by tonics. The mineral acids, the decoction of bark with infusion of roses, the sulphate of quinine in camphor mixture, the sulphate of zinc, myrrh and steel in the form of the mistura ferri composita, are the most efficacious. In many cases these tonics serve only to aggravate the febrile excitement, and increase the cough and dyspnœa. Under such circumstances their employment may be superseded by a mild expectorant, such as the citrate of ammonia with the oxymel of squill, and a small proportion of æther. In the advanced stages of consumption the diet may be nourishing.

Attention must chiefly be directed, in the latter periods of the disease, to the relief of urgent symptoms. The night sweats, which so greatly harass and weaken the patient, are in some degree checked by full doses of æther and ammonia taken at bed-time. The efficacy of acids is comparatively feeble. Cough may be alleviated by demulcents; diarrhœa by chalk, catechu, and aromatics. Both these objects will be promoted, with the additional advantage of procuring sleep, by the last resource of medical art, opium, and this valuable medicine should be freely given, increasing the dose gradually, so as to ensure to the patient the full benefits which it is capable of affording. Six grains of Dover's powder, with three of extract of hyoscyamus, made into two pills, may at first be given every night at bed time. Laudanum, or the liquor opii sedativus, the acetate and muriate of morphine, may be administered at a later period. The opiate may be given in combination with almond emulsion,—or with chalk mixture and infusion of catechu,—or with æther, subcarbonate of ammonia, and camphor julep, according as cough, looseness, or languor with faintness predominate. Injections of thin starch with laudanum are required when the diarrhœa is particularly harassing.

CHAP. XI.

PERICARDITIS.

Pathology of the Heart. Inflammation of its investing Membrane. When first noticed. Symptoms of Acute Pericarditis. Its Progress. Diagnosis. Morbid Appearances. Causes. Metastasis of Acute Rheumatism. Treatment of Acute Pericarditis. Of Adhesion of the Heart to the Pericardium. Its consequences.

There is scarcely a subject in the whole range of medical literature, which opens so extensive and important a field of investigation as the pathology of the heart. It has excited the attention of physicians from the earliest times; and in the elaborate dissertations of Morgagni concerning the morbid anatomy of the heart,* we see that every advantage had been taken of one means of arriving at a knowledge of this interesting branch of science. In the attempts, however, which were made to connect the diseased appearances of the heart, found after death, with the symptoms which occurred during life, the older pathologists unquestionably failed; and it has been reserved for our own times to infuse some portion of accuracy into this part of the inquiry. Much, however, still remains to be done, more especially in determining the *causes* from which the several kinds of diseased heart primarily arise; and the *effects* produced by each of them—first, upon the other structures of the heart; and secondly, upon the various organs of the body.

The labours of Corvisart, Laennec, and other French pathologists, have contributed largely to the present improved state of the pathology of the heart; but it would be injustice to the merits of Dr. Latham to omit noticing the valuable lectures on the principal diseases of the heart, and their sources, delivered by him in 1828.† To these I shall have frequent occasion to refer.

The diseases of the heart may be divided into three classes: —1. The inflammatory affections of the proper tunic of the heart, and of its investing membrane, the pericardium. 2. The affections of the parietes of the heart, occasioning changes in its bulk or flexibility. 3. The affections of the interior of the heart (inflammatory or otherwise) which disorganize its valvular apparatus. The former of these will be considered in the present chapter. The remainder, being chiefly of a chronic character, will be deferred for future investigation.

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* Morgagni de Causis et Sedibus Morborum per Anatomen indagatis, lib. ii. epist. 16 ad 27.

† Published in London Medical Gazette, vol. iii.

There is every reason to believe, that when the heart is inflamed, the primary seat of disease is the pericardium. In one or two cases, indeed, the *substance* of the heart has been found inflamed, without a corresponding affection of the investing membrane; and Mr. Stanley has recorded one instance in which intense inflammatory action pervaded every part of the heart—its inner membrane, outer membrane, and muscular walls.* These occurrences, however, being rare, need not be dwelt upon. Inflammation commencing in the pericardium is, on the other hand, by no means unfrequent; and though it occasionally dips down a little way into the substance of the heart, still the character of the disease is the inflammation of a serous membrane, and the disease itself, therefore, is correctly denominated PERICARDITIS. Such a form of thoracic inflammation was acknowledged by many of the old nosologists; but their notions regarding it were very confused, and the most important circumstance in its pathology was altogether overlooked; namely, its connection with acute rheumatism. The honour of this discovery is due to Dr. David Pitcairn, who first noticed the fact in 1788; and upon the strength of whose authority it was mentioned by Dr. Baillie in 1797. The first distinct account, however, which appeared in this country, of the disease, since called *rheumatism of the heart*, was from the pen of Sir D. Dundas.† Pericarditis is an idiopathic or primary as well as secondary disease; but the symptoms by which both forms of the affection are characterized are so similar, that it is unnecessary to separate their consideration.

ACUTE PERICARDITIS.

Symptoms.—Acute inflammation of the pericardium is ushered in, and accompanied in its course by febrile symptoms, generally of great severity. I met with a case in which the rigors (recurring occasionally through the whole course of the disease) exceeded in violence anything witnessed in the worst forms of quartan ague. The local symptoms indicating that the source of mischief is the pericardium, are the following. Pain referred to the region of the heart, or to the left clavicular region, or sometimes to the *scrobiculus cordis*, occasionally pungent as in pleurisy, but often described as a suffocating weight. The patient complains of violent *palpitation*, and the motions of the heart are often perceptible at a considerable distance. In other words there is *impetus*. A strong pulsation of the carotid arteries, with noise in the ears, epistaxis, and giddiness, are not unfrequent symptoms. Respiration is hurried, but the patient can gradually fill the chest without aggravating the pain. The countenance is expressive of intense anxiety. In many instances motion or exertion of any kind occasions an apprehension on the part of the patient of immediate death. There is usually present, also, a short, dry, but incessant cough, aggravating the other symptoms, and frequently excited by pressure on the epigastrium. The pulse, which is always very frequent, bounds against the finger with a harsh jarring feel, at first regularly, but as the disease advances, irregularly both in point of force and frequency. The tongue is white, and the skin often bathed in sweat, as in acute rheumatism.

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* Medico-Chirurgical Transactions, vol. vii. page 323.

† Medico-Chirurgical Transactions, vol. i. page 37. London, 1809.

The terminations of acute pericarditis are as follow:—1. In the worst cases, the countenance becomes livid, the breathing more and more laborious, the eye glassy, and the patient dies at the end of two or three weeks, generally in great agony, and retaining his senses to the last. 2. In a certain proportion of cases, the acute symptoms gradually yield, but the patient suffers under the effects of such inflammation, viz. adhesion of the pericardium, and fluid effusion into its cavity. 3. Under more favourable circumstances, the patient gradually and permanently recovers; but, upon the whole, the prognosis is unfavourable as to ultimate and complete recovery. A quick pulse, and occasional palpitation, will generally be found to remain behind, with a strong tendency to relapse; the recurrence of the disease being, if possible, still more dangerous than the primary attack.

Diagnosis.—The diagnosis of pericarditis from inflammation of the lungs, bronchia, pleura, and liver, is often a matter of difficulty, although apparently there are sufficient symptoms already detailed, to distinguish these diseases under every possible circumstance. This difficulty arises in two ways:—first, from the absence of those symptoms which the physician would naturally expect to meet with, especially pain in or about the region of the heart, palpitation, and jarring pulse, all of which have been wanting in undoubted cases of pericarditis; second, from the predominance of others unconnected with the heart, which instead of occasioning seem to preclude ambiguity. A remarkable instance of this is recorded in the Dublin Hospital Reports.* The symptoms during life appeared to denote unequivocally fever, complicated with bronchial inflammation. Dissection exhibited the usual effects of acute pericarditis. In Mr. Stanley's case, already quoted,† the symptoms during life indicated phrenitis. Dissection exhibited pericarditis.

Percussion affords very little positive aid in determining the presence of pericarditis, but auscultation affords a very distinct symptom. Dr. Latham was the first to notice that in *rheumatic* pericarditis, a whizzing noise, or bruit de soufflet, accompanies or immediately follows the contraction of the ventricles. Both percussion and auscultation are essentially useful in negative diagnosis—that is to say, in determining where the inflammatory action is not seated. By their assistance the physician can often exclude the lungs, the pleura, and the bronchia from his consideration. This, in itself, is no trifling help towards fixing the seat of disease.

Morbid Anatomy.—On dissection of those who die of acute pericarditis, the internal membrane of the heart appears of a deep red colour, and numerous vessels are seen ramifying on its surface. The bag of the pericardium is found gorged with serum, in which shreds of coagulable lymph are floating. Recent lymph will be found also covering the surfaces of the membrane; and in some places the heart and pericardium will, perhaps, be seen to adhere. The muscular structure of the heart in contact with the pericardium becomes much more crowded with vessels than in its natural state; and sometimes extravasated blood, or globules of pus, may be found dispersed through it. Along with these appearances, others are often noticed, denoting the co-existence of inflammation in the diaphragm, pleura, or substance of the lungs.

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* Vol. iv. page 362.

† London Medical Gazette, vol. iii. pages 131 and 209.

Causes.—All periods of life are liable to inflammation of the heart, but it chiefly prevails between the ages of fourteen and thirty. Both sexes are in like manner its subjects, but I think it is most common among females. Persons of a broad chest and plethoric habit of body, appear to be those most particularly predisposed to it. Pre-existing disease of the heart (more especially enlargement) has great influence in determining the course of disease *towards* the heart. The same thing holds true of anxiety of mind. Dying of a broken heart expresses on some occasions with sufficient accuracy a pathological truth.

Cold, and the metastasis of acute rheumatism, are the chief exciting causes of acute pericarditis. One instance of the disease, with which I am acquainted, was owing to the patient having slept on a pavement, during a frosty night, while in a state of intoxication. Another I traced as distinctly to travelling on the outside of a coach, during a cold and rainy night. But it is unquestionable, that the extension or metastasis of acute rheumatism is by far the most common cause of inflammation of the heart. The circumstances which lead to this have never been very accurately investigated. In some instances, but by no means generally, the affection of the joints is relieved when inflammation attacks the heart. On the other hand, it has been found, that a fresh accession of inflammation has sometimes invaded the joints during the existence of active pericarditis.

Treatment.—The treatment of acute pericarditis, supposing the disease to be ascertained with accuracy, must be regulated by a consideration of the peculiar office of the heart in the animal œconomy. Bleeding from the arm is a proper measure in all cases in the first instance. Its repetition, however, must depend on the patient's constitution and habit of body. The blood will always be found highly cupped and buffy, but in pericarditis this is no guide to the further employment of the lancet. If there be any suspicion of previous disease, especially *enlargement* of the heart, bleeding from the arm must be practised with the greatest caution, for by emptying too suddenly and too largely the right side of the heart, the left may press in upon it, and the whole organ give way. Where the disease can be traced distinctly to rheumatic metastasis, depletion from the system is generally well borne, and indispensably required. Some caution is requisite when there is *intermission* in the pulse; but this symptom is by no means to deter us even from the vigorous employment of the lancet, should it be called for by other symptoms of an unequivocal character.

Great benefit is often experienced in this disease from the application of leeches, which have the advantage of being applicable when the state of the system is unfavourable to further depletion from the arm. Saline, and antimonial medicines are to be freely exhibited. The combination of tincture of digitalis with tartar emetic, has great power in reducing the force of the heart's action. In severe cases it may be given at short intervals, its effects being duly watched.

Cold lotions made with muriate of ammonia and vinegar, or, in the severest cases, bladders of ice applied to the region of the heart, will be productive of great advantage. At a more advanced period of the complaint, a large blister will be found very useful.

Occasional purgatives of an active kind should be given, and repeated according to the urgency of the case. Calomel in combination with James's powder and opium, constitutes also an important part of the treatment. The administration of calomel pushed even to ptyalism should be continued for a considerable time after the more urgent symptoms have been subdued, with the view of either preventing inflammatory effusions, or, having occurred, of causing their absorption. A mild anodyne will contribute to relieve the distressing cough. If the violence of the inflammatory action should display itself during the progress of pericarditis, in headache, epistaxis, or severe abdominal pain, the local abstraction of blood from the structures secondarily attacked, should not be neglected.

Adhesion of the heart to the pericardium.—This is one of the most frequent consequences of acute inflammation of the heart. By confining and hampering the movements of the heart, adhesions are generally productive of great and serious inconvenience. They lead eventually to enlargement of the heart, and thus pave the way for that train of evils which flows from *hypertrophy*, and which will be noticed hereafter. It is a remarkable circumstance, that complete adhesions of the heart to the pericardium have occasionally been found, without any accompanying disease of the heart, or any evidence of pre-existing inflammation of the heart, or any symptom present during life indicative of heart disease. I have myself witnessed a remarkable instance of this kind. The formation may have been congenital. When the adhesions in the course of time lengthen, the inconvenience sometimes diminishes. It appears that habit will, in such cases, reconcile the heart to a degree of restraint in its action, which at first may have been almost insupportable.

When the acute stage of inflammation of the pericardium has passed off, leaving behind it either a strong liability to relapse, or actual disorganization in the shape of solid or fluid effusion, the following plan of treatment should be pursued. It consists in keeping down the action of the heart by occasional purgatives, and a very light diet; in avoiding all severe exercise; and restraining, as far as possible, those emotions of mind which tend to hurry the circulation. A drain should be established in the neighbourhood of the heart, by means of a seton, which should be kept open for at least six weeks. Calomel should be given so as to affect the mouth, and with it may be united small doses of digitalis, or of the extract of cicuta,—drugs which have a well marked power of diminishing that general irritability of the frame, which a chronic state of disease in the heart commonly induces. When from cold, or any other accidental cause, the symptoms become unusually severe, leeches may be applied to the chest.

CHAP. XII.

PERITONÆAL INFLAMMATION

Of the different kinds of Abdominal Inflammation. Characters of Acute Peritonæal Inflammation. As modified by the Structure and Functions of the Subjacent Viscus. Gastritis. Enteritis. Morbid Appearances from Acute Peritonitis. Causes. Diagnosis. Prognosis. Treatment. Symptoms and Progress of Chronic Peritonitis. Morbid Appearances. Treatment.

In the abdomen, a variety of structures are met with, all of course subject to inflammation. These it will be necessary briefly to notice, before the several kinds and characters of abdominal inflammation can be justly appreciated. There is, in the first place, the peritonæum, the most extensive serous membrane of the body, lining the viscera and the muscular parietes of the abdomen. Whatever portion of it be primarily attacked, the general characters of the inflammation remain the same, receiving only some slight addition or modification from the structure and functions of the subjacent viscus. It is to Bichat we are indebted for our present notions of the general nature and modifications of peritonæal inflammation. They had formerly been confounded with diseases commencing in the organs invested by this membrane. Bichat first pointed out, as an important principle both in pathology and practice, that a morbid state of the peritonæum was compatible with, and frequently attended by, a healthy state of the parts which it covers. This principle had been partially known before, but never distinctly avowed, or thoroughly investigated.

The second of the structures within the abdomen, is the mucous membrane of the intestinal canal, and the third is the parenchyma of the solid viscera. The inflammatory affections of each of these parts will require separate consideration.

ACUTE PERITONITIS.

The peritonæum is subject to two kinds of inflammation, the acute and chronic, very distinct from each other in their character and progress. The acute form of peritonæal inflammation is that to which my attention will be first directed.

Symptoms.—This disease begins with rigors, a quickened pulse, and other marks of fever. From the commencement it is usually attended with its characteristic symptom—pain of the abdomen, increased on pressure; but it will occasionally be observed, that pain of the back is chiefly complained of for the first four-and-twenty hours. In some cases, the invasion of the disease is sudden, and the pain becomes in a short time almost intolerable ; in others, the advance of the disease is more gradual, and the pain is felt only on pressure. At first, it is commonly confined to one spot, more particularly the navel, but in severe cases extends over the whole abdomen. With very few exceptions, indeed, the pain of peritonæal inflammation is *constant.* The pulse is about a hundred in a minute, varying very much in character, but for the most part contracted, small, hard, or wiry. There is great thirst, and the tongue is covered with a cream-coloured mucus. The abdomen is swelled and tense. The patient lies on his back, and frequently complains even of the weight of the bed-clothes. Peritonæal inflammation may exist with every possible state of the evacuations, but generally the bowels are constipated. In some cases the nervous system participates, and to the ordinary symptoms of pyrexia, is superadded delirium. If severe, and suffered to proceed unchecked, it may prove fatal between the seventh and tenth day; the countenance collapsing, the pulse becoming very indistinct, and the extremities cold.

On dissection, the peritonæum generally, or in some of its parts, will be found minutely injected with blood, the convolutions of the bowels loosely glued together, and serum (in which flakes of lymph may be observed floating), or sometimes pure pus, in considerable quantity, effused into the cavity of the abdomen. Ulceration of the peritonæum has been met with, but it is a rare appearance. The intestines are occasionally distended with air, constituting tympanitis.

Such is the general character of peritonæal inflammation, whether the omentum, or the mesentery, or the surfaces of the different solid and membranous viscera, or that portion of it which lines the muscular parietes of the abdomen, be the chief seat of disease. Its symptoms are in some respects modified by the structure and functions of the subjacent viscus; and these modifications have been assumed, by all nosologists, as the groundwork of a subdivision of this affection into several species. It is certainly a curious circumstance, considering the tendency to spread, which the inflammation of membranes, both serous and mucous, generally exhibits, that peritonæal inflammation should sometimes be so completely confined to one portion of its extent, that these nosological distinctions become applicable in practice. The particular symptoms which characterize inflammation of the capsule of the liver will be best explained, when the corresponding affection of the parenchyma of that organ comes under review. For the present, therefore, I confine my attention to the symptoms of Gastritis and Enteritis. The inflammation of the omentum, mesentery, and peritonæal coverings of the spleen, and pancreas, offer no phenomena of any particular interest.

GASTRITIS.

Acute Gastritis is a very rare disorder; and the few cases of it on record are probably inflammations of the mucous, rather than of the peritonæal coat of the stomach. The symptoms usually attributed to inflammation of the peritonæal coat of the stomach, are an acute pain, and sense of burning heat in the epigastrium, vomiting, increased by the mildest ingesta, extreme debility, a remarkable anxiety of countenance, and delirium.

ENTERITIS.

Symptoms.—Inflammation of the peritonæal surface of the intestines is the most frequent of all the forms of peritonitis; and it is also the most dangerous, and the most rapid in its progress. It has been known to prove fatal in four days. Besides the symptoms already enumerated as characterizing peritonæal inflammation generally, enteritis is distinguished by great prostration of strength, restlessness, a continual tossing of the arms, nausea and vomiting, an expression of great anxiety in the countenance, and *costiveness*. This last symptom, though not constantly, is yet so generally met with in cases where the peritonæal surface of the bowels is *primarily* affected, that it may be looked upon as one of the diagnostic marks of the disease. Where peritonæal inflammation, however, occurs symptomatically in the course of typhoid or other fevers, diarrhœa is generally observed to prevail. In enteritis, the pulse is often very obscure, but frequent, hard, and incompressible. The tongue is white, with a streak of brown fur down the middle. The pain which is usually referred to the navel, is aggravated occasionally in paroxysms, probably from spasmodic contractions of the muscular coat of the bowels. In the worst cases, delirium comes on about the sixth or seventh day (seldom earlier), and death speedily follows.

The extreme feebleness of the pulse, the coldness of the extremities, sunk features, hiccup, and other marks of failure of the powers of life, which occur in the last stage of enteritis, are often said to denote that gangrene has taken place; but in a great number of instances, these symptoms occur without the slightest trace of gangrene being discoverable on dissection. Extensive effusion of coagulable lymph and pus will alone be met with. In such a case strict pathology would lead us to say that an adequate cause of death is found simply in the *extent* and *violence* of inflammatory action. When gangrenous spots do appear, it is supposed by some pathologists that the inflammation has spread to the muscular structure of the intestines.

Causes.—Acute peritonæal inflammation occurs to all ages,* and at all seasons of the year. It is seen in the plethoric adult, and in the debilitated and scrophulous child. Weakness of frame is the *diathesis* in which it most usually prevails.

Enteritis frequently arises without any known or at least adequate exciting cause. Cold combined with moisture, is presumed to be its most common source; but enteritis has not unfrequently been brought on by causes applied more directly to the membrane itself; such as a full meal of high-seasoned food, intemperance, and accumulation of hardened fæces. It has been often aggravated, perhaps even actually induced, by strong, and especially *spirituous* cathartics. In some instances it has been owing to causes which no prudence could avert; such as intus-susceptio, morbid elongations of the mesentery and omentum strangulating a portion of intestine, and a wound of the bowel in the operation of tapping. There is a particular species of peritonæal inflammation, which occurs to women after child-birth, and is generally known under the name of *puerperal fever.* Whether the local disease be primary or secondary, is still a matter of doubt; but there is every reason to believe that the affection, whatever be its nature, is contagious, and communicable by the clothes of the practitioner. It is often fatal, and sometimes runs a course no less rapid than that of peritonitis from more common causes.

Diagnosis.—The only diseases with which I have ever seen peritonæal inflammation liable to be confounded are colic, and calculous affections of the kidney. In regard to colic, it must be borne in mind, that peritonitis has, in some cases, succeeded violent attacks of the colic; and the possibility of this conversion should never be lost sight of while engaged in establishing the diagnosis. Colic is distinguished from peritonæal inflammation by the absence of fever, by the pain occurring in paroxysms, with occasional intervals of complete ease, and by its being alleviated, rather than increased, on pressure. With respect to affections of the kidney, I have seen them attended with severe and constant pain of the whole abdomen, costiveness, nausea, and vomiting; but the pulse was slow in these cases, and pressure on the belly did not aggravate the pain.

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* A distinct case of peritonæal inflammation, occurring in an infant a week old, and proving fatal on the fifth day, is recorded by Dr. Garthshore, Med. Communications, vol. ii. page 44.

Prognosis.—The general prognosis in peritonæal inflammation, particularly in enteritis, is, upon the whole, unfavourable. The disease, it is true, is very much under our control at first; but if neglected, even for twenty-fours, the mischief is sometimes irremediable. The sequelæ of the disease too are very formidable—agglutination of the bowels, dropsy, and a tendency to relapse. The particular prognosis is to be regulated almost entirely by the *extent* of pain. When the boundaries of the inflamed portion of membrane can be ascertained, judicious measures will probably save the patient. In weakened habits, when the *whole surface* of the membrane is affected, recovery is almost hopeless. To have procured a free passage of the bowels is, of course, a favourable symptom; but it is very far indeed from being decisive as to the subsidence of inflammatory action.

Treatment.—When the disease is once ascertained, the treatment is sufficiently simple. Purgative medicines are not to be given at first, while active inflammation is going on; but blood is to be taken from the arm to the extent of at least sixteen ounces; and if the pain on pressure continue unabated, this should be repeated in six or eight hours, before any attempts are made to open the bowels by medicine. In very urgent cases, it is advisable to place the patient in a warm bath, and in that situation to open a vein. The abstraction of a quantity of blood is thus rendered not only more effectual, but more certain. It was long ago observed, that the blood does not always appear buffy in the early stages of enteritis. No reliance therefore can be placed on this symptom. Nor is the practitioner to be deterred by the marks of *oppression*, or apparent exhaustion, which often occur in the outset of the disease. The pulse commonly rises as the system is freed from the load which oppresses it. In addition to bleeding at the arm, or sometimes, as a substitute for it, particularly where the seat of pain is limited, or when the strength of the patient is likely to fail, sixteen leeches may be applied to the abdomen. They sometimes give great and immediate relief. A blister should not be applied until a later stage of the disease. The practice of applying a blister, in cases of inflammation, indiscriminately without due regard to period, cannot be defended. In peritonæal inflammation it is particularly hurtful, as it takes away our best guide in the administration of other remedies. Warm fomentations are greatly preferable in an early stage of the disease, and should be applied diligently, on any return of pain.

Inflammatory action must mainly be subdued by the measures now alluded to. Internal medicines, however, are not to be neglected, and mild laxatives, in small and frequently repeated doses, are the most useful. Castor oil and Epsom salts, or the infusion of senna and tamarinds of the Edin. Pharm. may be mentioned as well adapted to the circumstances of this disease. If the stomach is very irritable, and rejects medicine in the fluid form, calomel, in union with the extract of hyoscyamus, will sometimes be retained, and prove useful. Full doses of calomel are as likely to be retained as small doses, with greater chance of benefiting the patient. Although as a general rule active purgatives are to be avoided, I have sometimes, as a last resource, given the oil of croton, and occasionally with at least temporary advantage. Frequent emollient glysters are very serviceable, and should never be neglected. Effervescent draughts may also be tried. A tobacco injection has been mentioned as affording a chance of relief in desperate cases, but it cannot be recommended.

CHRONIC PERITONITIS.

Symptoms.—A chronic inflammation of the peritonæum is not unfrequent, and there is very considerable uniformity in the symptoms and progress of the disease. It is always a primary ailment, and its advances are very insidious. Occasional pricking pains over the abdomen, with a quickened pulse, and coated tongue, give the first evidence of disease. The pain, or *tightness*, of which the patient complaints, is occasionally aggravated in paroxysms of great violence. This tendency to periodical exacerbation in the pain, is an important index of chronic peritonæal inflammation. The pulse remains steadily above 100, and is often active. During the early stages of the disease, the patient continues his ordinary occupations, but complains always of an increase of pain or soreness across the abdomen, from fatigue. There is thirst, and want of sleep and appetite. As the disease advances, the features appear sharp and contracted, and the countenance pale, sallow, or doughy. The tongue is either of a bright red colour, or covered with a thick mucus. The taking of food creates much uneasiness, particularly a sense of weight in the abdomen. There is no considerable tension in common cases, but a degree of hardness in the viscera may often be distinctly traced. Costiveness usually prevails, and increases very considerably the distress of the patient. I have seen this go on to perfect *ileus* (stercoraceous vomiting). Great emaciation and debility succeed, and the patient ultimately dies hectic, and exhausted. The duration of the disease varies from three or four to twelve months. It is full of danger. I have seen but one case recover where the symptoms were strongly marked. Relapses are to be dreaded, even though a diminution of the pulse, and of pain, should indicate a degree of improvement.

Morbid anatomy.—On dissection, the peritonæum appears discoloured, and often thickened to a great extent. Tuberculated accretions of different forms are found attached to it, sometimes appearing like bunches of grapes. The convolutions of the intestines are matted together, and often form with the liver, omentum, and other viscera, a mass, in which it is scarcely possible to distinguish one part from another. In many cases there is an effusion of dropsical fluid, and occasionally of purulent matter, with or without ulceration of the peritonæal membrane. The subjacent viscera are sometimes perfectly healthy.

Diagnosis.—The disease for which chronic peritonitis is most liable to be mistaken is ascites, or ovarial dropsy (an accidental, and by no means frequent symptom, being looked upon as the primary disease). Several persons have been tapped for this complaint. A few pints of water are perhaps discharged, but without affording any material relief to the sufferings of the patient.

Causes.—The causes of this affection are involved in great obscurity. I have seen it occur as a consequence of common fever. Hardness of the abdomen is occasionally met with in convalescence from typhus, and recovered from, but this is not to be ascribed to chronic peritonæal inflammation. All ages are subject to this disease. In children it is by no means uncommon, and it constitutes one of the forms of *marasmus*, as I shall hereafter more fully point out. It appears to be connected at that period of life with the scrophulous diathesis; and I have noticed, as a peculiarity of the disease when so occurring, that erosions take place of the peritonæal and mucous coats of the intestines, by which a quantity of matter, which had been formed by the diseased peritonæum, finds its way into the intestine, and is discharged by stool. This form of the affection I have ventured to call the scrophulous inflammation of the peritonæum.*

Treatment.—The treatment of chronic peritonitis is very little understood, but the following plan offers the best prospect of success. Topical bleeding, to the extent of six ounces, may be directed twice in the week, while the sensation of pricking pain continues. Sometimes it may be necessary to bleed from the arm. Without free alvine evacuations, the distress becomes quite insupportable; but large quantities of purgative medicines, which are sometimes given, under the idea that the disease consists only in fœculent accumulations, are decidedly prejudicial. Some gentle mercurial preparations and blisters may be tried. In one case, I thought benefit was derived from digitalis. A light diet of milk and vegetables should be strictly enforced. Opium is often indispensable in the latter stages of the disease.

CHAP. XIII

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE ALIMENTARY CANAL.

Liability of this Membrane to Inflammation, Acute and Chronic. Aphthous Diarrhœa of Children. Inflammation of the Mucous Membrane of the Stomach in Adults; Of the Mucous Membrane of the small Intestines in Adults. Of Dysentery. Its Causes. Symptoms. Morbid Appearances. Treatment. Symptoms and Treatment of Chronic Dysentery.

THE pathology of the mucous membrane of the alimentary canal is a subject of great extent and importance, which during the last ten years has occupied a large share of the attention of medical writers. Some parts of it are now well understood; others are involved in a degree of obscurity, which a long course of observation is still required to clear up. This membrane, throughout its whole extent, is disposed to inflammation. Such an affection occurs both in an acute and chronic form,—

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* See Medico-Chirurgical Transactions, vol. xi. page 258.

as idiopathic, and as supervening on other diseases,—in adults, and in children. There appears to be a peculiar tenderness and susceptibility of inflammation in this membrane during the first years of life; and this points out the great importance of regulating the diet of children with the most scrupulous care.

The mucous membrane of the intestinal canal, as was remarked by Dr. Baillie,* is more disposed to *ulcerate* than any other membrane of similar function in the body. It is difficult to assign a satisfactory reason for this; but it probably depends on some minute difference of structure. There is a good deal of resemblance, observes this author, between the structure of the inner membrane of the trachea, and that of the urethra, and their secretions likewise are not very different. The inner membrane of the intestines, however, has a structure and secretion peculiar to itself.

As a general principle, it may be stated, that inflammation occurring in any one part of the mucous membrane of the alimentary canal, is apt to spread to others. Thus it is, that when we observe aphthæ in the mouth, we may expect, on dissection, to find ulceration of the ileum. But it is to be observed, also, that the appearances of inflammation are in some cases confined to one portion of its surface. It is not uncommon, for instance, to find ulceration of the ileum terminating by a distinct line at the valve of the colon, and the mucous membrane of the large intestines altogether free from disease. I shall now describe, very briefly, the symptoms and progress of the inflammation of the mucous membrane of the intestines, as it occurs at different periods of life, and in different parts of the membrane, but without pretending to fix, with any degree of accuracy, the precise portion of it occupied by disease.

INFANTILE APHTHA; APHTHOUS DIARRHŒA; OR THRUSH.

Infants are subject to an inflammatory affection of the mucous membrane of the alimentary canal, generally classed as a species of diarrhœa, but known also by the name of aphtha, or the thrush, from a symptom which attends it in one of its stages. It occurs from the first to the eighth month, and among such as are fed wholly or partially upon spoon-meat.

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* Morbid Anatomy. Fifth Edition, page 169.

There is reason to believe, that it is always connected with an improper diet. It is characterised by vomiting, fœtid eructations, and pain, apparently referred to the epigastrium; tormina, diarrhœa, and some degree of tenderness of the abdomen on pressure. The infant draws up its legs towards the belly. The stools are green, and slimy, or tinged with blood. Frequently they are ejected from the bowel with great force. As soon as any food is taken into the stomach, the child has a motion, giving the appearance as if it passed immediately through the bowels. In consequence of the diarrhœa, the child emaciates rapidly. The skin is flabby. The features appear sharp and contracted. As the disease advances the tongue becomes red; the mouth is covered with aphthæ, appearing like slips of thin curds. The verge of the anus is red and inflamed. The child is frequently drowsy, before the aphthæ appear. This symptom is vulgarly called sleeping for the thrush. The brain also becomes secondarily affected, illustrating an important pathological principle alluded to when treating of the diagnosis of hydrocephalus. Coma is occasionally observed to come on towards the termination of the complaint.

This disease is a true inflammation of the mucous membrane of the bowels. On dissection there appear, in various parts of the inner surface of the intestines, particularly the ileum, irregular patches of inflammation, slightly elevated above the surrounding parts, and often covered with minute vesicles and ulcers.* It often proves fatal in a short time, and requires, therefore, great attention in its early stages.

Treatment.—The treatment should begin by an emetic, consisting of four grains of ipecacuanha. A tea-spoonful of castor oil should then be given, or a few grains of rhubarb and magnesia in dill water, which may be repeated at intervals while the skin remains hot, and the urgent symptoms continue. A mucilaginous injection, composed of two ounces of thin starch with five drops of laudanum, may be thrown up, when the diarrhœa is severe. The belly may be fomented with a decoction of camomile flowers, rubbed down with half an ounce of the extractum papaveris. A warm bath is also very serviceable. The child may take frequently a tea-spoonful of the following mixture:—

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* Consult Dr. Abercrombie's valuable work, entitled "Pathological and Practical Researches on the Diseases of the Abdominal Viscera:" 1830; page 307.

℞ Pulveris cretæ compos. ʒss.
——— acaciæ, ℈j.
Syrupi papaveris, ʒij.
Aquæ anethi, ʒx.
Spt. ammoniæ compos. ♏xx. Misce.

Let me here impress upon the student, the necessity of great caution in administering opiates to infants, even in the mild form of the syrup of poppies. The infantile system is peculiarly susceptible of the influence of opium, especially in the solid form (pulv. cretæ compos. cum opio). When an opiate is required, laudanum should be preferred, its dose being the most easily regulated, and its effects the most transient. One drop may be given, and repeated two or three times a day, according to the effect.

In the treatment of aphthous diarrhœa, the diet of the child should claim the first consideration. Every effort should be made to give the child a breast of healthy milk. Where this is impracticable, ass's milk, or the lightest farinaceous preparations, with a small proportion of cow's milk, should be directed. To ensure the safety of the child under these circumstances, the utmost attention should be paid to the preparation of its food. Its consistence, sweetness, and even heat, should be regulated by the *medical attendant.*

An affection, in every respect the same with that now described as occurring to infants, is met with also in children from the period of weaning, to the fourth or fifth year of life, and even later. It is attributable, I believe, in most cases to an improper course of diet; very often to a diet composed of a larger proportion of animal food than the stomach, at that age, is capable of digesting. It is of a more chronic nature than the *aphthous diarrhœa* of infants at the breast. It frequently goes on to complete emaciation, and constitutes, in fact, one of the forms of the atrophia of children,—a disease which has received the various names of tabes mesenterica, marasmus, and infantile remitting fever.

On dissection, in these cases, the mucous membrane of the bowels is found extensively ulcerated, and the mesenteric glands more or less enlarged; but this last appearance is probably dependent on the former.

GASTRITIS MUCOSA.

The mucous membrane of the *stomach* is liable to inflammation from a variety of causes, but the principal are excess in the use of ardent spirits, and poison.

The idiopathic gastritis mucosa of drunkards is characterized by pain at the epigastrium, vomiting, even of the mildest ingesta, low fever, and that trembling hand which never fails to accompany diseases of alcoholic origin. When in its utmost intensity the vessels of the mucous membrane often give way, and a burst of hæmorrhage succeeds.

The *cure* of this disease can be effected only by that most difficult of all things, a reformation in the habits of a drunkard. Its relief may be obtained by leeches to the epigastrium, followed by a blister, and the internal administration of some mild mucilage, such as the mistura amygdalæ, holding in solution five grains of nitre, which may be repeated three times a day.

The second source of gastritis mucosa is poison. It has been supposed that the immediate cause of death by arsenic is inflammation of the stomach; but Sir Benjamin Brodie has shown the incorrectness of this as a general proposition. Occasionally, after a certain interval, inflammation of the mucous membrane of the stomach does come on in consequence of arsenic, and the case published by Dr. Roget* may be brought forward as an instance; but even there, the symptoms of high nervous irritation predominated greatly over those of local inflammation. Dr. Baillie states,† that on dissection of those who die from the effects of arsenic, an intense degree of redness appears in the inner membrane of the stomach. Portions of it are sometimes destroyed, and occasionally a thin layer of coagulable lymph is thrown out. Such appearances, however, cannot be relied on as unequivocal proofs of poisoning by arsenic; but the further prosecution of this subject is especially in the province of the medical jurist.

ENTERITIS MUCOSA OF ADULTS.

Inflammation of the mucous membrane of the small intestines occurs in *adults*, both as an idiopathic affection, and as symptomatic of other diseases,—in an *acute* as well as chronic form. The symptoms by which it is characterized are not always very distinct; and hence it is that the disease, though by no means uncommon, has hitherto remained without any appropriate designation from nosological writers. It was by some authors called the intestinal catarrh. Mucous enteritis appears to be its legitimate denomination. Dr. Pemberton was the first author who treated of it as a distinct disease.*

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* Medico-Chirurgical Transactions, vol. ii. 1811.

† Morbid Anatomy, page 147.

Symptoms.—Mucous enteritis is attended with a diffused soreness over the whole abdomen, rather than with pain. This is sometimes increased on pressure, but never to the extent that prevails in peritonæal inflammation. There is no considerable tension in the belly The pulse is quick, with thirst, *languor*, and considerable febrile oppression. By these symptoms we distinguish *inflammation* of the mucous membrane of the bowels, from that state of *irritation* of the membrane, which exists in common cases of diarrhœa; but it must never be forgotten, that the two states of disease are closely allied, and, in fact, run into each other by insensible degrees. The tongue in mucous enteritis is *red and smooth*, and eruptions take place about the lips. Vomiting is frequently noticed, with loss of appetite, indigestion, and irregularity in the alvine evacuations. Diarrhœa is almost uniformly present; the stools are slimy, and tinged with blood. In severe cases, pure blood is occasionally passed in considerable quantity. An increased secretion of mucus from the intestines constitutes one of the principal features of the disease. It must be confessed, however, that in the appearance of the evacuations there is considerable diversity. In some instances inflammation exists to a considerable extent, while the motions differ but slightly from those of common diarrhœa. Nothing perhaps more strikingly distinguishes this complaint than that degree of morbid irritability of the whole intestinal canal, by which food, even of the lightest kind, or a little cold water, taken into the stomach, stimulates the rectum to immediate contraction.

Prognosis.—The disease is always tedious, but not commonly fatal. It occasionally proves so, with or without supervening peritonæal inflammation, or it passes into a chronic state, in which the patient at length sinks exhausted. The chronic form of the affection is marked by pain of the abdomen, diarrhœa alternating with costiveness, increasing weakness and emaciation, hectic fever, and a tongue preternaturally red, or aphthous. It is certainly a curious circumstance, that the appetite, in this state of disease, often continues good.

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* See Pemberton's "Practical Treatise on various Diseases of the Abdominal Viscera." London, 1806; page 187.—This useful work should be in the hands of every student.

Morbid anatomy.—The appearances, on dissection, vary with the degree of violence in the inflammatory action, or, what amounts nearly to the same thing, with the period of disease at which death takes place. Sometimes we observe only an increased redness of the whole membrane; at other times, irregular patches of inflammation may be traced, elevated sensibly above the sound parts. The lower end of the ileum has been long observed to be the most common situation of these morbid appearances. Ulcers are frequently met with there, of an oval shape, having elevated edges. Sometimes a considerable extent of the inner membrane of the intestine is seen completely stripped from the muscular coat, or hanging attached to it in tattered shreds. In a few cases the ulceration perforates the peritonæal coat, and a portion of the contents of the intestine passes into the general cavity of the abdomen, producing inflammation that speedily proves fatal. Mucous inflammation of the intestines sometimes, although rarely, advances to mortification.

Causes.—The causes of this affection of the internal membrane of the bowels are not very well understood. A disposition seems to be given to it by irregular habits of life. The state of the atmosphere has probably at times some share in producing it, for it will be seen occasionally to prevail with almost epidemic frequency. I have seen it in its idiopathic form, arising from accidental exposure to cold and moisture, and one attack certainly favours a recurrence of the complaint. Mucous enteritis, however, is far more commonly a symptomatic, than an idiopathic, affection. It appears in the progress of continued fever, especially the low nervous or typhoid fever, scarlet fever, consumption, and all diseases attended with hectic; and it is one of the many sequelæ of measles. It would seem, indeed, as if inflammation and ulceration of this structure readily took place, whenever the system was in the state either of very high, or very long protracted inflammatory excitement.

Treatment.—If the disease, when idiopathic, comes under treatment in an early stage, great advantage will be derived from taking away ten or twelve ounces of blood from the arm. This I have several times seen to give an immediate check to its advance. At a later period, leeches to the abdomen prove an excellent substitute, and they may be repeated according to the urgency of the symptoms. Active purgatives of all kinds are carefully to be avoided, such as extr. colocynthidis compos. jalap, scammony, and senna. The secretions of the bowels, being very vitiated, must not remain pent up in the body, but their evacuation must be entrusted to the mildest means—two spoonfuls of castor oil, eight grains of rhubarb, or two drachms of manna.

When diarrhœa and irritable bowels constitute (as they generally do) the leading features of the complaint, the remedies to be relied on are demulcents and anodynes. Some practitioners have great confidence in the hydr. cum creta, believing that the mercury may contribute something to the relief of the inflamed membrane. Starch injections, with laudanum, are useful where the tenesmus is troublesome, but sometimes the mechanical irritation which enemata produce, more than counterbalances their good effects. Fomentations to the bowels are always serviceable, and the warm bath is an excellent resource. Particular attention should be paid to the diet of the patient, which should be of the lightest kind. Even broths should be strictly prohibited in the early periods of the disease.

Such are the general principles which guide the physician in the management of this severe disease. The choice of remedies may be left in a great degree to his own discretion. The following powder is largely employed:—

℞ Pulveris ipecac. compos. gr. vj.
Hydr. cum creta, gr. iv.
Fiat pulvis omni nocte sumendus.

Laudanum may be given in the following manner:—

℞ Misturæ amygdalæ, ℥j.
Tincturæ opii, ♏ iv.
Liq. Amm. Acetatis, ʒij. Misce.
Fiat haustus quarta quaque hora sumendus.

Where the stomach is irritable, and rejects fluid medicines, the following pill should be substituted:—

℞ Morphiæ acetatis, gr. ss.
  Extracti hyoscyami, gr. iij. Misce.
Fiat pilula, sextis horis repetenda.

When the feverish symptoms subside, and diarrhœa lessens, the tone of the bowels may be supported, and a healthier action induced, by some gentle tonic. I have found none to answer the purpose so well as myrrh, which may be given in the following form :—

℞ Decocti cinchonæ,
  Infusi rosæ compos. *sing.* ʒiv.
  Pulveris myrrhæ, gr. iv.
  Tincturæ opii, ♏ iij. Misce.
Fiat haustus ter indies repetendus.

Under like circumstances, calumba may be given in the following form :—

℞ Infusi calumbæ, ʒvi.
  Aquæ cinnamomi, ʒiv.
  Syrupi papaveris, ʒj.
Fiat haustus bis in die sumendus.

Throughout the period of convalescence, the bowels are to be regulated by the use of the following pill :—

℞ Pil. hydrargyri, gr. j.
  Pulveris ipecacuanhæ, gr. j.
  Extracti hyoscyami, gr. ij. Misce.
Fiat pilula ; omni nocte sumenda.

When the disease has assumed a chronic form, with extensive ulceration, the treatment is very precarious. Astringents and bitters, with laudanum, are indispensable with the view of checking the diarrhœa, but the astringent tinctures should carefully be avoided. The compound infusion of catechu has appeared to me less irritating than any of those to which I have given trial. The decoction of logwood, or of pomegranate, with a due proportion of laudanum, are also valuable remedies. A pill, consisting of one grain of calomel with three of the extr. hyoscyami, may be administered at night with considerable advantage. Change of air may be advised, and a milk diet.

ACUTE DYSENTERY.

Dysentery is a disease closely allied in its symptoms to that which was last under examination ; and though it would probably be going too far to say, that in cases of mild dysentery there is always inflammatory action of the vessels of the mucous membrane of the intestines, yet in severe cases of the disease, this certainly happens; and there can be no great error in considering dysentery as at all times arising from, or strongly tending to, such a state. This view of the *proximate cause* of the disease is borne out by a consideration of its remote causes, of its symptoms, and of the efficacy of a treatment similar to that which is adopted in other inflammatory affections. Dissection also leads to the same conclusion; for ulceration and mortification are here commonly met with, as in the inflammations of other parts. We presume that in dysentery the principal seat of disease is the inner membrane of the *great* intestines, for morbid appearances chiefly present themselves in that part of the alimentary canal.

Symptoms.—The characteristic symptoms of dysentery are griping pains of the bowels, and a frequent desire to go to stool, the evacuations being watery, mucous, or bloody, and without any admixture of natural fæces. The patient perpetually complains of a *load* in the intestines, feeling as if a ball or orange were lodged in the lower bowels. This he endeavours to throw off by violent efforts of straining, and, though he feels such efforts to be ineffectual, he is unable to resist them. This sensation is obviously attributable to the enormously swollen state of the mucous membrane of the colon and rectum. Small lumps, called *scybala*, are sometimes passed, but their appearance is not uniform, nor of any particular importance.

Such a state of disease in the alimentary canal is always accompanied by fever; in many cases of a highly inflammatory character. The pulse is very frequent; the mouth and fauces dry and clammy. The tongue is covered with a dark fur in the centre; or, when much bile is secreted, with a yellow fur at its posterior part; or it is red and polished. In severe cases the stomach becomes very irritable, the mildest fluids being rejected, while an unceasing thirst prevails; or that state of sympathetic irritation in the whole tract of the alimentary canal takes place, by which *tormina* and *tenesmus* immediately succeed the swallowing of the blandest liquids.

The nervous system suffers also severely. Nothing appears to weaken the body so much as dysenteric or *mucous* purging. In very bad cases, hiccup, cramps of the gastrocnemii, and strangury occur; and great exhaustion of power is evinced in the staggering or giddiness, and even syncope, which take place when the patient is brought into the erect posture. The duration of the disease is subject to great variety. The acute dysentery of hot climates sometimes proves fatal in a few days; but in a practical point of view it is more important to bear in mind the disposition of the disease to assume a *chronic* form.

Morbid anatomy.—In very severe and protracted dysenteries, dissection exhibits the inner membrane of the great intestines thickened, and formed into small irregular tubercles of a white or yellowish colour, with thickening of the peritonæal and muscular coats. In some instances, patches of the membrane have been observed in a state of high inflammation. Occasionally it is found abraded or extensively ulcerated. This appearance has been seen to extend to the small intestines. In tropical dysenteries the colon has sometimes been found decidedly in a state of mortification; and fæces have even escaped through the mortified gut into the cavity of the abdomen. With these, which are the true dysenteric appearances, marks of peritonæal inflammation are not unfrequently united.

Causes.—Dysentery is peculiarly the disease of warm climates and seasons. Between the tropics it often rages with a degree of violence, of which no adequate idea can be formed from instances of the complaint witnessed in this country. A sudden check to perspiration is perhaps the most common of its exciting causes. The night dews of hot countries are therefore particularly to be guarded against; but excessive fatigue and long exposure to the direct rays of the sun appear in some cases to have brought it on. Some stress has been laid upon irregularity of diet (such as eating abundantly of ripe fruit), as tending to dysentery, but its influence has probably been overrated. That contagion has occasionally operated as a cause of this disease, in camps and on board slave ships, cannot, I presume, be questioned; but neither in this country, nor in tropical climates, is dysentery contagious under common circumstances.

Treatment.—The treatment of dysentery is to be regulated by a consideration, first, of the tendency to inflammation which exists in the mucous membrane of the intestines; secondly, of that apparently spasmodic contraction of the muscular fibres in contact with the diseased membrane, by which the fæces are retained; and lastly, of that morbid increase of irritability in the whole extent of the alimentary canal, which prevails in this as well as other affections of its mucous membrane.

If the pain be constant and severe, and the pulse strong, or cordy, blood should be taken from the arm, particularly in a case which comes early under treatment. But the employment of *purgatives* constitutes the most important part of the cure of dysentery. They must be steadily persisted in, until *fæcal* evacuations have been produced, and that sensation of load in the bowels completely removed, which leads to the effort of straining. Then, *and not until then*, may the practitioner desist from the free use of his cathartics. Almost every kind of purgative medicine has been tried, and at different times recommended. Provided a due effect be produced, it does not appear to be of much consequence which of them is selected; but the liquid form is generally to be preferred. A pill of six grains of calomel, followed immediately by an ounce of the sulphate of magnesia, will commonly be found to answer well. In some cases, the oleum ricini may be preferable. Ipecacuanha, in the dose of three or four grains, combined with the extract of gentian, and frequently repeated, has been found very useful in India. If the stomach reject these medicines, some other form of cathartic is to be chosen, such as the compound extract of colocynth, to which a proportion of opium may be added, with the view of allaying irritation. Purgative enemata are found insufficient to overcome the disease. An ointment containing opium applied to the anus after every loose motion will greatly relieve the smarting which the acrid secretions of the bowels produce.

When proper fæcal evacuations have been procured, it will generally be proper to continue the use of aperient medicines, but in smaller doses. If, after that, pain and diarrhœa continue, anodyne draughts and mucilaginous anodyne injections will be required. The pulv. ipec. comp., either in the dose of fifteen grains at bed time, or of six grains every six hours, is well adapted to this state of the disease. It promotes perspiration, a proper attention to which is very requisite during the whole course of the complaint. The effect of this medicine will be materially aided by the warm bath. In hot climates, the exhibition of mercury, pushed so as to produce salivation, has been recommended as an effectual method of putting a check to the advances of dysentery.* The testimonies in favour of this practice are certainly very strong. At the same time we have no reason to believe that a vigorous and well-regulated employment of the means already recommended is less efficacious in hot climates than we find it in our own.

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* Dr. Fergusson, in Medico-Chirurgical Transactions, vol. ii. page 182.

CHRONIC DYSENTERY.

Chronic Dysentery is the sequel of the acute stage. It is sometimes connected with well-marked structural derangement, particularly ulceration of the mucous membrane of the colon; but at other times the structural derangement, if any, exists only in a slight degree, and the disorder is one of function rather than of structure. In other words, the membrane is left in a highly *irritable* state by preceding inflammation.

Symptoms.—In the severe forms of chronic dysentery, purulent matter may sometimes be detected in the motions; but, for the most part, the local symptoms will only differ in the degree of their violence from those of the acute stage. There is the same frequency of evacuation by the bowels, the motions being principally mucous, tinged occasionally with blood. In some cases the disease is purely local. The constitution in no respect sympathizes, and the patient suffers no inconvenience, except from the frequency of the calls to stool. At other times the whole system suffers. When the mucous membrane of the large intestines is *extensively* ulcerated, extreme weakness and emaciation follow, and the patient is at length worn out by the incessant discharge which is kept up. It is surprising, however, to observe how long he will sometimes linger under circumstances apparently hopeless. In such a state, the slightest irregularity of diet or regimen aggravates the symptoms.

Treatment.—Ulceration of the intestines has been supposed to heal with difficulty under all circumstances; but it is obvious, that the healing process will go on most favourably when a light, unirritating, and easily digested food is taken. A gentle action should be kept up also in the bowels, so as to prevent accumulation and distension. Hence we may see the propriety of directing an occasional dose of rhubarb and calomel, or of castor oil, when there is any considerable degree of griping pain.

When the circulation is languid, and the constitution much weakened, it is reasonable to suppose that the local action of ulcers will also be weak and indolent, and likely to be improved by such medicines as promote digestion, and give *tone* to the system.* This conclusion is supported by experience. Benefit has been derived, in many cases of chronic dysentery attended with ulceration, from the exhibition of a decoction of bark, myrrh, the aromatic confection, balsam of copaiva, and other stimulant and tonic drugs. When the evacuations are copious, but unattended with pain, and probably kept up by an irritable state of the membranes, astringents, absorbents, and opiates, are required; but in every case their effects are to be carefully watched, and omitted altogether if they bring on tormina. The following form of draught may be recommended:—

℞ Infusi cascarillæ, ʒvj.
Aquæ cinnamomi, ʒiij.
Pulveris kino compos. gr. x.
Syrupi papaveris, ʒj. Misce.
Fiat haustus bis indies sumendus.

Lime water, taken freely, has an excellent effect, particularly where there is nausea with acidity. It may be given in this form:—

℞ Liquoris calcis, ʒxj.
Confectionis aromaticæ, gr. xv.
Magnesiæ carbonatis, gr. vj.
Tincturæ humuli, ʒj. Misce.
Fiat haustus ter in die repetendus.

The sulphate of copper, in the dose of two grains twice or thrice a day, has been found an useful astringent in chronic dysentery. In some instances small doses of mercury (either in the form of hydr. cum creta, pil. hydr., or calomel) in combination with ipecacuanha, contribute to an improved appearance of the secretions of the intestines. The complication of dysentery with chronic hepatitis, so frequent in hot countries, will be an additional motive for the exhibition of mercurial alteratives.

Such are the principles upon which the treatment of chronic dysentery is to be conducted. They should be well understood, because an injudicious practice may do much harm, though the best regulated may prove ineffectual.

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* Consult Bampfield's Practical Treatise on Tropical Dysentery, which contains a very full and judicious exposition of the varieties of the chronic form of the disease, and of the principles of its treatment.

CHAP. XIV.

HEPATITIS.

Acute Inflammation of the Peritonæal Covering of the Liver. Diagnosis. Inflammation of the Substance of the Liver. Terminations of this Disease. Of Hepatic Abscess. Causes of Acute Hepatitis. Treatment. Blood-letting. Purgatives. Mercury. Of Subacute and Chronic Hepatitis. Its Symptoms, Progress, Causes, and Treatment.

THE peritonæum forming the capsule of the liver is liable to acute inflammation; and it is the common form of hepatitis which we have occasion to observe in this country. The substance of the liver is also the seat of inflammation, both acute and chronic. This disease, too, is occasionally met with here, but both are infinitely more frequent in hot climates, where hepatitis may justly be considered as endemic.

Characters of hepatic inflammation.—The peculiar symptoms which denote that the peritonæal surface of the liver is the seat of inflammation are, pain in the right hypochondrium, shooting to the back and shoulder, generally very acute, permanent, and increased on pressure; a white and dry tongue, hurried respiration, cough, and difficulty of lying on the left side. Jaundice occasionally occurs, and more particularly, it has been supposed, when the membrane covering the concave surface of the liver is affected; but it is not to be considered as a necessary concomitant of the disease. The bowels are sometimes constipated. At other times, diarrhœa is present. Indeed inflamed liver and dysentery frequently coexist in the same patient. In the highly aggravated cases of hepatic inflammation, the stools occasionally present a very singular appearance, called the turtle-fat motions. The highly irritable surface of the intestinal canal throws out large masses of a firm and greenish mucus.

Some stress has been laid on *cough*, as a symptom of acute hepatitis, because it is likely to create difficulty in distinguishing this disease from inflammation within the chest. It is sometimes loose, but more commonly dry, and appears in many cases to be owing to the spreading of inflammation from the surface of the liver to the diaphragm. A full inspiration does not always produce *cough*, though it increases *pain*; and very generally this symptom does not appear till the second or third day of the disease. In this manner, and by the increase of pain from pressure, we are commonly able to distinguish acute hepatitis from pleurisy. There is more difficulty in distinguishing chronic pleurisy from an affection of the liver; but this subject has been already discussed (page 233). The diagnosis between inflammation of the liver and spasm of the gall ducts from the passage of a biliary calculus, will come under consideration hereafter, when the symptoms of jaundice are explained.

Besides the abdominal and thoracic symptoms which characterize hepatitis, we may notice in many cases, an extreme dejection of the spirits, and highly irritable state of the nervous system. From its frequent connection with disease of the liver, this symptom has been called hypochondriacism. It is present both in the acute and chronic forms of hepatic inflammation, and may contribute, *inter alia*, to establish the diagnosis.

Tropical hepatitis.—Whether the hepatitis of warm climates begins in the membrane or parenchyma of the liver, is of little moment; for it is abundantly obvious, that in a large proportion of cases, the latter structure becomes quickly, and to a great extent, involved in the disease. The symptoms which characterize acute inflammation of the *substance* of the liver, are in most respects the same with those of its peritonæal surface; but in addition to them, some degree of swelling is generally to be felt externally; the pain is more obtuse than when the membrane is affected; jaundice takes place; the urine is of a deep saffron colour; the tongue is covered with a white, or sometimes a yellowish fur; the pulse is frequent and hard; the skin hot and dry; and commonly there is nausea and vomiting, not from inflammation, but extreme irritability of the stomach.

HEPATIC ABSCESS.

In hot climates the inflammation of the substance of the liver often advances with great rapidity, so that in a short time suppuration takes place; and it has been observed that an abscess forms in the liver as rapidly where the local pain is trifling as where it is intense.* In cases of hepatitis, originating in this country, abscess of the liver must certainly be viewed as an uncommon occurrence. That suppuration will take place, may be inferred from the pulse continuing full and frequent, and the pain urgent, with *rigors*. When abscess has actually formed, there will be a sense of weight in the part, with *throbbing* pains, occasional flushings of the countenance, night perspirations, and other marks of hectic fever.

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* Dr. Clark, of Dominica, relates a case (Duncan's Medical Commentaries, vol xiv.) where suppuration began on the fifth day of the disease, and on the twenty-ninth the abscess burst; almost the whole substance of the right lobe of the liver being destroyed.

The further progress of the disease is subject to great variety; depending on various causes, but more especially on the seat of the abscess, whether on the surface of the liver or imbedded deeply in its substance. Hepatic abscess deep seated usually proves fatal without any escape of its contents, by the constitutional irritation which it occasions, followed by hectic and diarrhœa. When near the surface, the matter of the abscess works its way out by one or other of the four following modes: 1. Adhesions sometimes form between the liver and the parietes of the abdomen; the tumour becomes more and more prominent, and the matter is discharged by an external opening. The usual situation of such a tumour is between the third and fourth false ribs. 2. Sometimes, where such adhesions have not formed, and the walls of the abscess are thin, the matter bursts into the cavity of the abdomen, bringing on peritonæal inflammation, which quickly proves fatal. 3. Occasionally the matter of the abscess finds its way by ulceration into the colon or stomach; and patients have recovered where there was reason to believe that such an event had occurred. 4. Lastly, it is by no means uncommon for abscess of the liver to form a communication with the cavity of the thorax by erosion of the diaphragm. Pus will then be discharged (generally along with bile) by the bronchia, giving rise to the very curious symptom of *bilious expectoration;* but the patient seldom recovers.

The abscesses formed by an inflammation of the liver are often of enormous size, capable of holding several quarts of matter. Very frequently *hydatids* are found accompanying them, and they add greatly to the danger of the disease. The pathology of these morbid productions is very little understood. They have been found in all the great cavities of the body, but more frequently attached to the liver than in any other situation. Under all circumstances, abscess of the liver is a dangerous state of disease. It is only where the abscess is small, that recovery can, with any degree of confidence, be anticipated.*

Causes.—The causes of acute hepatitis are the same with those of inflammation generally; but a very strong predisposition to it is given by hot climates, and a long course of full living with indulgence in spirituous liquors. Heat appears to have some peculiar and inexplicable influence upon the liver. To this principle only can we attribute the frequency of hepatic complications with the intermittent and continued fevers of warm countries, the occurrence of cholera and other bilious affections in this country during the summer and autumn months, and the general prevalence of hepatitis in tropical regions. The liver in warm climates seems to be the seat of disease nearly in the same proportion that the lungs are in Great Britain. Many of those who suffer from acute and chronic hepatitis in this country have had the foundation of the disease laid by residence in a hot climate.

The predisposition to liver disease which is given by high living and spirituous liquors, though less interesting in a pathological view, is practically of far more importance; and it is applicable, not only to acute inflammation of the liver, but to every form of chronic derangement of the hepatic system, whether occurring in hot or cold climates. It must not, however, be forgotten in practice, that genuine acute inflammation of the liver is occasionally met with in this country, where no suspicion of high living can be entertained;—in delicate chlorotic young women for instance, and in the latter stages of phthisis pulmonalis.

Treatment.—The treatment of hepatitis, whether it occurs in cold or temperate climates, whether implicating the substance or confined to the investing membrane of the liver, is to be conducted on the same general principles. The three measures of most importance are blood-letting, purging, and mercury. I shall offer a few observations on each of these modes of combating hepatic inflammation.

1. *Blood-letting.*—In the early stages of the acute hepatitis of tropical countries, blood must be taken from the arm freely,

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* For the fullest information concerning hepatitis, and for numerous splendid delineations of hepatic disorganizations, especially abscess, the reader is referred to Mr. Annesley's great work, entitled "Researches into the Causes, Nature, and Treatment of the Diseases in India," 4to. 1827.

until remission of pain has been obtained. The great danger of suppuration makes it necessary to be prompt in the employment of the lancet. The deceitful remissions that occur in the progress of the complaint must on no account throw the practitioner off his guard, but on the first return of pain, the same measure must be again resorted to. In the milder forms of hepatitis that occur in this country, the loss of twelve ounces of blood, by cupping, from the side or back, will sometimes have a better effect than venesection. Leeches to the region of the liver are particularly serviceable when its peritonæal surface is chiefly implicated. It has long been observed, that the blood drawn during acute inflammation of the liver exhibits the very remarkable appearance of *green buff*. Different ideas have been entertained regarding the cause of this phenomenon. None of them, however, are very satisfactory.

2. *Purgatives.*—There is no form of inflammation which displays the benefit of purgative medicines so strikingly as hepatitis. Pathologists have imagined that in the peculiarities of the abdominal circulation a rational explanation of this is afforded. By increasing the secretions from the intestinal canal, the vessels which form the vena portæ are relieved, and thus congestion of blood in that vein and consequent distension of the liver are directly lessened or prevented. The best forms of purgative for hepatic disease are, calomel in union with the extract of colocynth, and the neutral salts, especially the sulphate of magnesia, and the rochelle salt (soda tartarizata). In acute inflammation of the liver antimony should be added to the calomel, and the following form may be adopted:—

℞ Hydrarg. submur. gr. v.
Pulveris antimonialis, gr. iv.
Extr. coloc. compos. gr. iij. Misce.
Fiant pilulæ duæ.

The sulphate of magnesia is best given in the infusion of roses, as thus:—

℞ Infusi rosæ compos. ℥xj.
Magnesiæ sulphatis, ʒss.
Syrupi, ℥j. Misce.

When the stomach is irritable, the effervescing aperient will claim a preference:—

℞ Sodæ tartarizatæ, ʒij.
—— carbonatis, ℈i.
Aquæ destillatæ, ℥j
Tincturæ humuli, ♏xxx.
Syrupi, ʒj. Misce.
Sumat cum succi limonis cochl. j majori.

3. *Mercury.*—The employment of mercury was at one time strongly advised in the acute tropical hepatitis, even from its earliest periods. Experience, however, has shown what theory would have dictated, that mercurial irritation adds to the general inflammatory excitement, and that the tension of the arterial system should be taken off by bleeding and purging before mercury is had recourse to. In the second stage of the disease, the value of mercury as an antiphlogistic is unquestionable. The system may be brought under its influence by any of the usual modes,—in confined habits, by small doses of calomel or blue pill; in irritable states of the bowels, by the hydr. cum creta, or mercurial inunction.

The acute hepatic inflammations that occur in this country are seldom sufficiently intense to require the specific influence of mercury for their cure; but, with due precautions, mild mercurials may be employed even here with some prospect of shortening the convalescence.

SUBACUTE AND CHRONIC HEPATITIS.

These terms ought in strictness to be applied to that state of slow inflammation of the liver which is attended by fever, and which terminates like other inflammations in suppuration, or hypertrophy, or condensation of structure from interstitial deposit. Such a disease exists, and is by no means rare. In common language, however, chronic hepatitis is often extended, so as to include different chronic affections of the liver which may or may not have their origin in inflammation. With a view to practice, it is not perhaps desirable to trace too minutely the distinctions between the several chronically diseased conditions of the liver, but the state of slow or subacute inflammation possesses features sufficiently characteristic to entitle it to separate consideration. In a future division of the work I shall take up the consideration of the non-inflammatory diseases of the liver, the principal of which are jaundice, hepatalgia, torpid, and tuberculated liver.

Symptoms.—Subacute and chronic inflammation of the liver sometimes advances in a most insidious manner, and gives little or no indication of its existence. Abscesses have even been found in the liver, where no suspicion of liver disease had existed during life. On the other hand, many persons have been suspected of it whose livers after death presented no traces of disorganization. Making due allowance for such anomalies, we are justified in saying that the liver is chronically inflamed when the following combination of symptoms presents itself:—Fever (marked especially by an obstinately loaded tongue, a quick pulse, and a skin hotter and drier than natural), with a sense of weight or dull pain in the right side or back, extending to the shoulder, and increased by pressure or lying on the left side;—a yellow tinge of the conjunctiva;—a pink sediment in the urine;—an impaired appetite;—emaciation;—and an irritable condition of the stomach and bowels. Such a state of disease is frequently accompanied with that dejection of spirits and causeless apprehension of evil commonly called hypochondriasis.

As the disease advances, it brings in its train a variety of other symptoms depending upon the *kind* and *degree* of structural derangement which may be going on. In some cases the peritonæal surface of the liver throws out an abundant serous effusion into the general cavity of the abdomen, and ascites follows. At other times the inflammatory action spreads upwards to the diaphragm and pleura, and symptoms of chronic pleurisy are superadded to those of subacute or chronic hepatitis. Occasionally, a deposition of coagulable lymph takes place into the body of the gland. The liver enlarges, and the enlargement can be distinctly felt under the finger, extending sometimes even as low as the umbilicus.

When this has continued for some time, the blood is with difficulty propelled through the liver. Hence arises a fresh train of symptoms, among which may be enumerated venous hæmorrhages from the stomach and bowels, a swoln state of the external veins of the abdomen, an irregular pulse, and lastly, general dropsy.

Causes.—The observations already offered on the causes of acute hepatitis apply equally to the subacute and chronic forms of the disease. They are sometimes the result, sometimes the precursors, of the acute stage. Hot climates and the abuse of spirituous liquors are the most frequent of the remote causes of chronic hepatitis, but we can also trace the disease to ague and remitting fever, to exposure to cold and wet, and to those other sources of inflammatory disease which have been mentioned in preceding pages. Attacks of a subacute form of hepatitis are not unfrequently met with in young persons of delicate habit, especially during the cold months, obviously attributable to atmospheric vicissitudes.

Prognosis.—The degree of danger attending chronic hepatitis is so various, and depends upon such a variety of circumstances, that no rules of prognosis can be laid down. Much will depend upon age and the state of the patient's constitution, much also upon the previous duration of the disease, and the extent of morbid alteration which the structure of the liver has undergone.

Treatment.—The means of relief are comprised in the occasional application of leeches to the side;—repeated blistering;—a course of moderate but regular purging;—gentle doses of mercury, pushed so as to affect the system, aided by a light diet, and the most careful abstinence from all fermented and distilled liquors. These measures, which will usually suffice to reduce chronic inflammation of the liver in this country, are often insufficient in tropical climates, where the high atmospheric temperature stimulates the liver, and, in spite of such care, keeps up inflammatory action. Under such circumstances no other resource presents itself but removal to a cold climate. The influence of this great change upon the functions of the liver is, in many instances, truly surprising.

The chief reliance, as far as medicine extends, is to be placed on purging and mercurials. The natural purging waters, as those of Cheltenham, are well adapted to this complaint; but the Seidlitz, Epsom, or Rochelle salts, in doses so regulated as to keep up a gentle but constant action on the bowels, are, probably, equally effectual. To obtain the mercurial influence, calomel or the blue pill may be given in small doses at night, but it commonly answers better to direct a scruple or half a drachm of the strong mercurial ointment to be rubbed on the side every night, till the mouth be touched. This effect should be kept up, though cautiously, for several weeks. If feverish symptoms appear, or are aggravated under the use of this remedy, it should be immediately relinquished.

CHAP. XV.

RHEUMATISM.

Symptoms of Acute Rheumatism. Disposition to Metastasis. Causes. Seat of Rheumatism. Of the Rheumatic Inflammation of Synovial Membrane, or Arthritis. Principles of Treatment in Acute Rheumatism. Of Chronic Rheumatism. Varieties in the Symptoms of this Disease. Causes and Seats. Treatment applicable in the several varieties of Chronic Rheumatism. Peculiarities of Sciatica, Lumbago, and Pleurodyne.

Rheumatism is an affection of the extremities and external coverings of the human body, occupying the muscular, tendinous, and fibrous textures, and characterized by pain, stiffness, and swelling of a joint, with or without fever, according to the violence of the disorder. In common life, a threefold distinction is made, *viz.*, into the true rheumatism, the rheumatic gout, and the rheumatic fever. The two latter alone merit the title of *inflammations*, but there is obviously a close analogy in the pathology of all these affections. In their symptoms and mode of treatment, however, sufficient difference exists to entitle them to separate examination. It is certainly a curious circumstance, considering the frequency of this complaint, that there should still be so much obscurity in regard to several of the fundamental doctrines connected with rheumatic inflammation. This may be partly explained, perhaps, from its being a disease of so little danger, as never to have received any elucidation from the labours of the morbid anatomist.

ACUTE RHEUMATISM.

Symptoms.—We shall begin by the consideration of that highest grade of rheumatism, called the rheumatic fever, the acute rheumatism of nosologists, a painful and severe disease, thus characterized. It is ushered in by a sudden attack of rigors, followed by the usual symptoms of pyrexia, and is particularly distinguished by the great pain and swelling which affect one or more joints, coupled with an utter inability to move them, and very commonly with considerable redness. The affected joints are acutely tender to the touch. The pains are aggravated towards night, and, for the most part, at all times, by external heat. The swelling, except in certain cases hereafter to be specified, does not take the form of the joint, but is diffused over the cellular membrane in its neighbourhood. Several joints are commonly affected at the same time, but one of the most singular phenomena of rheumatic inflammation is the strong tendency which it exhibits to *shift its situation:* to abate in one or two joints, often very suddenly, and to become as suddenly violent in another, and a distant part.

The accompanying fever presents several important peculiarities. The pulse seldom exceeds 100 or 110 in the minute; but instead of the hardness which characterizes inflammatory fever, it is full, soft, and as it were *round.* The skin, instead of being hot, harsh, and dry, is commonly in a state of profuse perspiration; and a remarkable acid odour of its secretions may be noticed. The tongue is always deeply loaded. The papillæ appear elongated, and covered with a thick and abundant mucus. The functions of the brain are in a peculiar manner exempt. Headache is seldom present in any form of rheumatic inflammation, acute or chronic; and delirium is almost unknown. There is great thirst, but rarely any nausea or vomiting. The bowels are costive, though easily made to move. There is a sallowness in the aspect, and a peculiar expression of the countenance, sufficiently distinct from that of common febrile anxiety.

Terminations.—Different as are the local and constitutional symptoms from those of other phlegmasiæ, the terminations of rheumatic inflammation are no less peculiar. The local inflammation may run high, but it never proceeds to suppuration. It is seldom, indeed, that any permanent injury is done to the joints; for if effusions of a transparent gelatinous fluid into, or around the sheaths of tendons and the capsular ligaments, take place, they are commonly absorbed in a short time. The most important consideration in this view of the subject is the disposition which exists, in a state of acute rheumatism, to an affection of some internal organ by *metastasis*, or rather by extension of inflammation; for it is not often that the joints are relieved when this event takes place. The organ chiefly liable to be so affected is the heart, and its investing membrane, the pericardium, and it is from this occurrence alone that any danger in the progress of the disease is to be apprehended. The symptoms that result are those already described when treating of pericarditis. It was then remarked, that the circumstances which occasion this extension of rheumatic inflammation to an internal organ have never yet been satisfactorily determined.

Recurrence of rheumatic fever.—No disease is more liable to relapse on slight occasions than acute rheumatism. Going out a little too early in the open air, too much exercise of a particular joint, or an excess in diet, have frequently brought it back in all its former violence. Acute rheumatism is characterized also by a tendency to recurrence after a long interval. Those who have once suffered from an attack of the disease should therefore be particularly careful to avoid what we shall point out as its exciting causes, or to obviate them by proper attention to clothing. Rheumatism is certainly the most tedious of all the acute inflammations. In many cases it appears to run a defined course, which does not admit of being shortened by any process of treatment, and in a certain length of time to wear itself out. This is seldom less than a month, or longer than six weeks. That the acute sometimes terminates in a state of chronic rheumatism cannot be doubted; but, instead of being a frequent occurrence, as is often imagined, this is in fact rare; and though the recovery from genuine acute rheumatism is tedious, it is usually perfect.

Remote causes.—Children are very seldom the subjects of acute rheumatism. It most commonly occurs from the age of puberty to the thirtieth or thirty-fifth year of life, and chiefly affects those of sanguine temperament, robust form, and phlethoric habit of body. It prevails principally in the months of December and January, and least frequently in August and September. Cold, with moisture, particularly where long applied, is certainly the most common, and perhaps it might be added its only exciting cause. Hence it is that we find it attributed, in a large proportion of cases, to sleeping in damp beds, living within damp walls, sitting in damp clothes, or working in damp situations.

Seat of rheumatism.—Very little is known regarding the precise seat of inflammation in acute rheumatism. It appears to be situated primarily in capsular ligaments, tendinous sheaths, and aponeurotic expansions; but the cellular membrane around the joints also partakes of inflammation in the active form of the complaint. In this, perhaps, consists the principal local distinction between acute and chronic rheumatism.

Arthritis, or inflammation of synovial membrane. — In some instances of disease, not usually distinguished by the physician from those of common rheumatism, though known to the world by the name of the *rheumatic gout*, the swelling will be found to take the exact form of the joint, or of a bursa in its neighbourhood. This affection is simple inflammation of the synovial membrane. By some pathologists it is imagined that such a disease is altogether distinct from true rheumatism, and the term *arthritis* has been applied to it. It occurs both with and without fever. It is said to differ from rheumatism in its causes, progress, and treatment, as well as in the character of its symptoms. It is this form of fibrous inflammation which occurs as a secondary effect of gonorrhœa. It is frequently confined to a single joint, as the knee or the elbow, and then commonly falls under the cognizance of the surgeon. It exhibits less tendency to shift its situation from one joint to another. Lastly, it has been observed, that the synovial or bursal rheumatism is more under the control of local remedies, especially leeches and blisters, than the more common or *diffuse* form of rheumatism. All distinctions among diseases, even the most minute, which serve to facilitate treatment are useful. On this account the separation of arthritis from rheumatism may be considered as an improvement in pathology, but the student will remember that in all their important relations, the two affections are closely associated.

Treatment.—If an opinion were formed from the various, and even opposite modes of treatment which have been recommended in the common acute rheumatism, not upon theoretical grounds, but after ample and successful experience, it might rationally be supposed, that the disease occurs in the most opposite states of the system; but this opinion is at variance with common observation. I believe the better conclusion to be, that acute rheumatism is at all times a tedious, and rarely a dangerous disease; that a large proportion of cases would recover with very slight care; and that, in many, medical treatment is of little further service than as obviating the tendency to internal inflammation. It cannot, I think, be doubted, with regard to the power of *cutting short* the disease, that a considerable difference exists between rheumatism and common inflammation.

Three plans of treatment have been advised in the acute rheumatism. 1. The usual antiphlogistic system, consisting of blood-letting, purgatives, saline and antimonial medicines. 2. Calomel and opium. 3. Bark.

1. The authority of Sydenham is in favour of the first; and though it is impossible to call in question the very remarkable efficacy of opium, and of calomel in combination with opium, in many cases of this disease, yet the plan of treatment which that judicious physician employed, will be found, upon the whole, the most generally efficacious. The important distinction to be kept in view between the practice in acute rheumatism and that in other inflammatory affections is, that while, in the latter, a continuance of the same symptoms calls for a repetition of the same evacuation, it does not do so in the former. To subdue rheumatic inflammation by the lancet alone (even if possible), would be to weaken the system unnecessarily; for it is to be remembered, that, in this disease, the inflammation is not in an organ essential to life. Sixteen ounces of blood may at first be taken from the arm, and repeated two days afterwards, if the pain continues urgent, and the pulse active, with much feeling of general oppression. The blood will always be found highly cupped, and buffy. The further treatment of the disease may commonly be entrusted to purgatives, calomel and opium, antimony, colchicum, and the common saline diuretics; but venesection must be again had recourse to, at any period, if symptoms of cardiac or other internal inflammation supervene. The following purgative draught is very effectual in the treatment of acute rheumatism:—

℞ Infusi sennæ compositi, ʒx.
Pulveris colchici, gr. viij.
Tincturæ jalapæ, ʒj.
Syrupi mori, ʒj. Misce.
Fiat haustus catharticus.

A saline draught with colchicum may be administered in the further progress of the disease:—

℞ Magnesiæ sulphatis, ʒj.
———— ustæ, gr. viij.
Vini colchici, ♏xx.
Aquæ menthæ sativæ, ʒx. Misce.
Fiat haustus sexta qq. hora adhibendus.

In the subacute forms of rheumatism the efficacy of this combination is very strikingly displayed.

2. The power of opium, and of calomel in combination with opium, in relieving pain, and repressing acute rheumatic inflammation, is very remarkable, and in almost all cases this medicine may be employed with advantage. Calomel in acute rheumatism is best given in full doses. It is seldom that mercury affects the salivary glands while the system is labouring under rheumatic fever. The following formula may be recommended:—

℞ Hydrarg. submur. gr. iv.
Opii purificati, gr. j. Misce.
Fiat pilula j, mane et nocte sumenda.

3. Bark was introduced as a remedy in acute rheumatism, with the highest encomiums, by Dr. George Fordyce, and Dr. Haygarth; but as far as my observation extends, it has not answered the expectations which might have been formed of it from the testimony of these authors. It has appeared to me to be of use only in the latter periods of the disease, when considerable pain and stiffness of the joints are frequently found to exist, but with a *natural* state of the pulse and tongue.

Regimen.—In the true acute rheumatism, local applications to the affected joints are of little service;—or rather, in most cases, of no service at all. This remark applies equally to fomentations, cold lotions, rubefacient liniments, and blisters. Not so, however, is it with regard to diet. In acute rheumatism, the functions of the stomach are often little impaired; but a free indulgence of the appetite protracts the complaint, frustrates the effects of other remedies, and has certainly contributed to give to rheumatism that character of tediousness, which makes it the opprobrium of physic. Broths and jellies, animal food in every shape, as well as wine and porter, are to be prohibited; and a cool, spare, vegetable diet strictly enforced.

CHRONIC RHEUMATISM.

In the great majority of cases primary rheumatism is of the chronic kind. Indeed the very rarity of acute rheumatism is sufficient to point out that the chronic is not often the sequel of the acute form of the disease. Chronic rheumatism is characterized by pain of the joints aggravated by motion, stiffness of the joints, thickening of the several structures in their vicinity, or increased effusion into the synovial bags. It is readily distinguished from the acute rheumatism by the absence of inflammatory fever, and of redness in the affected part.

To this kind of affection the term *rheumatism* is, in common language, specially appropriated.

1. Three species of true rheumatism may be distinguished. The first is that which is connected with a certain degree of obscure febrile excitement in the system, and which would be more correctly designated by the term *subacute rheumatism*. It is known by the pains occasionally shifting their situation suddenly, as in the acute form of the disease, and by their being increased by warmth, and especially, at night, by the warmth of the bed. The frequent occurrence of œdema along with the affection of the joints, may serve to distinguish this from the other species of the disease. Those joints which are surrounded by a large mass of muscular substance, and which are the most constantly exerted, are especially liable to it, such as the hip, and the joints of the lumbar vertebræ. This state of chronic rheumatism is accompanied by a white tongue, thirst, a quickened pulse, and a costive state of the bowels.

2. The second species of chronic rheumatism is marked, not by any degree of excitement in the system, but by the absence of constitutional symptoms. Hence it is not unreasonable to believe, that there may be a loss of tone in the vessels of the affected part. It is not so common as the preceding species, but it sometimes follows it. Stiffness of the joint is here the prominent symptom. *Pain*, in this form of the complaint, is often not at all felt except on motion, or on occasion of changes in the heat or moisture of the atmosphere. It is relieved rather than increased by the warmth of bed. The pain and stiffness do not shift from joint to joint. Spontaneous coldness of the limb, and even a degree of paralytic torpor, are often complained of by the patient. The pulse is seldom quick, or the tongue white.

3. The third species of chronic rheumatism is attended with permanent derangement in the structure of the joint; and it is that form of the disease which has been so ably described by Dr. Haygarth, under the title of Nodosity of the Joints. The ends of the bones, the periosteum, and ligaments, become thickened; and nodes form upon them, often to such an extent as to distort the joint in the most unsightly manner. This form of rheumatism chiefly affects the fingers, but I have seen it also in the knees and ancles. It is principally met with in women,

after they have passed the period of menstruation. It is attended with pain of the joint, particularly severe at night.

Causes and seats.—The usual causes of chronic rheumatism are exposure to cold and moisture, or to partial currents of air, and local injuries, such as strains and bruises. It is also one of the common effects of the syphilitic poison, and of mercury. The structures affected in chronic rheumatism are those called by Bichat *fibrous: viz.* the periosteum in every part of its extent, the tendons and tendinous sheaths of muscles, the ligaments around the joints, the investing membranes of the nerves and of the teeth, and not unfrequently the substance of muscle itself. The sclerotic coat of the eye, which has a dense structure of an analogous kind, is subject also to a species of *rheumatic* inflammation. To distinguish this affection is by no means easy; nor is this the only instance in which chronic rheumatism has given occasion to difficulties in diagnosis. Lumbago has been mistaken for nephralgia or lumbar abscess; rheumatism of the intercostal muscles for pleurisy; and sciatica for ulceration within the cavity of the acetabulum.

Prognosis.—The obstinacy of chronic rheumatism is proverbial, but being a disease that affects only the exterior of the frame, it may continue for years, without material injury to the general health. Under good management many cases may be cured, and life, under all circumstances, rendered at least more comfortable.

Treatment.—No general rules of much importance can be laid down for the guidance of the student in the treatment of chronic rheumatism. Attention must always be paid to the state of the constitution; and the remedies, both internal and external, varied according to the greater or less degree of feverish excitement present. The number of cures for the rheumatism, both popular and scientific, is so great, that it is difficult for a student to believe that any case can occur, for which some appropriate remedy may not be found. Instead, however, of a bare enumeration of the several plans that have been tried, and occasionally found useful in chronic rheumatism, it may be advisable to attempt, at least, to point out a few *principles* that may prove of general application.

1. In some of the forms of subacute rheumatism, particularly lumbago and sciatica, *the local abstraction of blood* by cupping will be productive of great benefit. Where the pains are very

severe, it may be even necessary to take blood from the arm, which in this state of disease will always be found cupped and buffy. Leeches are well adapted to those cases of *arthritic* rheumatism, where there is pain and swelling of a joint from distention of the synovial membrane. Dr. Haygarth recommends their application where an enlargement of the extremities of the bones has taken place.

2. The cure of chronic rheumatism may occasionally be effected by promoting *diaphoresis.* This mode of treatment is adapted to those cases where there exists some degree of febrile excitement, where the pains are of recent date, and shift from one joint to another. The warm bath may be directed twice in the week (provided the pulse be perfectly free from all activity), and the following diaphoretic draught given repeatedly during the day:—

℞ Misturæ camphoræ, ʒvj.
Liquoris ammoniæ acetatis, ʒiij.
Pulveris ipecac. compos. gr. vj.
Pulveris acaciæ, gr. iv.
Syrupi, ʒj. Misce.
Fiat haustus sextis horis sumendus.

It is unnecessary to add, that neither in this, nor in any other form of chronic rheumatism, can any thing be hoped for without proper attention to clothing, and, above all, the use of flannel as an under dress. In the same description of cases which are benefited by diaphoretics, the vinum colchici may be given with great advantage. Where there is any considerable degree of effusion, either within the capsular ligaments or the bursæ, or where the cellular membrane in the neighbourhood of the joint is œdematous, a draught of the following kind will be found useful:—

℞ Aquæ menthæ piperitæ, ʒvij.
Liquoris ammoniæ acetatis, ʒij.
Vini colchici, ♏ xv.
Syrupi tolutani, ʒj. Misce.
Fiat haustus ter in die sumendus.

Where the colchicum irritates the bowels, it should be omitted, and a common saline effervescing draught substituted.

3. Great benefit is experienced in all forms of chronic rheumatism by strict attention to the bowels. In some cases the daily use of an enema will be found to supersede the necessity of aperient medicine. Where this is insufficient, a mild ape-

rient draught should be directed twice, or even three times during the week:—

℞ Infusi rhei, ʒx.
Magnesiæ sulphatis, ʒij.
Tincturæ sennæ,
——— cardam compos. *sing*. ʒj.
Sacchari albi, ℈j. Misce.
Fiat haustus, pro re nata sumendus.

A more active purgative, containing calomel and antimony, may be given, should the symptoms of feverish excitement (from cold or any other accidental cause) be unexpectedly renewed.

4. Where great torpor and debility of the general system prevail, stimulant and tonic medicines of different kinds have been administered with advantage, the principal of which are gum guaiacum and the volatile alkali (or their combination, the volatile tincture of guaiacum), the oil of turpentine, the balsam of Peru, and mezereon. Bark, both in the form of decoction and powder, unquestionably possesses considerable power over certain forms of chronic rheumatism attended with general torpor; and arsenic has proved successful, even when the *structures* about the joints had become partially disorganized. The good effects of all these remedies will be considerably aided by the diligent use of stimulating embrocations (such as the compound camphor or soap liniment), friction alone appearing to be a powerful means of exciting the languid action of the vessels. The following formula is strongly recommended by Dr. Bardsley:—

℞ Linimenti saponis compositi, ℥ij.
Liquoris ammoniæ,
Tincturæ cantharidis,
——— opii, *sing*. ʒij. Misce.
Fiat linimentum.

In all cases of chronic rheumatism of long standing, permanent stiffness of the joint is chiefly to be dreaded, to which nothing contributes so much as neglect of the due exercise of the joint. Exercise, therefore, should always be strongly recommended to a rheumatic patient. In a few cases, where torpor and stiffness predominate, the introduction of needles into the skin and subjacent cellular membrane, has proved serviceable. This practice is called acupuncturation.

5. Mercury, pushed so as to affect the mouth, is very effec-

tual in the cure of rheumatic affections of a chronic nature. It appears to operate as a general *stimulant*. The best mode of administration is five grains of Plummer's pill (pilula submur. hydrarg. compos.), taken every night at bed-time. In many of these cases it has been supposed, that a syphilitic taint may have existed in the constitution, and kept up the disease; but very frequently there is no foundation for such a suspicion. Where rheumatic pains can be traced to cold while the system was under the influence of mercury, decoctions of sarsaparilla, guaiacum, and elm bark, or the powder of sarsaparilla, carefully prepared, in doses of two drachms three times a-day, may be given with a reasonable prospect of advantage. The sarsaparilla should be continued, in full doses, for five or six weeks.

6. No one remedy, perhaps, is of such general application in the treatment of chronic rheumatism as warm bathing, general and topical. In that severe form of the disease which has been called nodosity of the joints, scarcely anything else can be relied on to soothe the pain, and relax the rigid fibres. The efficacy of the waters of Bath and Buxton, even in very obstinate cases, is generally acknowledged. They are applicable, however, only in that species of rheumatism which is unattended by inflammatory excitement. The vapour bath is a remedy of very decided efficacy when there is effusion into the joints of long standing, which the usual antiphlogistic measures have failed to reduce.

7. In all cases of chronic rheumatism, *pain* is, if possible, to be relieved; and, generally, opium will be found the only effectual resource. The best forms of administering opium in this disease are Dover's powder (pulv. ipecac. compos.), in the dose of ten grains every night at bed-time; or the liquor opii sedativus in combination with antimonial wine, and in doses sufficient to lull pain and procure sleep. The headache and costiveness which opium occasions, and which constitute the great bar to its employment, must be obviated, as far as possible, by the use of enemata, or the aperient formerly recommended. Where opium in every form disagrees with the system, the extracts of conium, or hyoscyamus, may be substituted; but the relief they afford is very trifling.

There are three forms of chronic rheumatism which have acquired specific denominations. They are sciatica, lumbago, and pleurodyne. A few observations upon the peculiarities which have entitled them to such a distinction may not be out of place.

SCIATICA.

This is rheumatism of the cellular envelope of the great sciatic nerve. It is characterized by an excruciating pain, extending from the loins down the back part of the thigh, particularly urgent during the night, and totally preventing sleep. When occurring in its utmost intensity, sciatica is accompanied with high irritative fever, a hard pulse, and deeply loaded tongue. It occurs in all habits, but chiefly in the robust. It can be traced in almost all cases to the combined influence of cold and moisture. Cupping, blistering, and active purgatives long and steadily continued, are required for its cure. A pill, containing three grains of calomel and one of opium, should also be given every night at bed-time, until the system has been brought under the influence of mercury. In obstinate cases an issue should be directed. The application of the *moxa* has occasionally given relief, and, as a last resource, is certainly worthy of a trial.

LUMBAGO AND PLEURODYNE.

Lumbago is the rheumatism of the lumbar vertebræ, or rather of the large masses of muscular substance attached to them, and serving for the support of the body. It is distinguished from nephritis by the aggravation of pain on stooping. It is a less violent form of ailment than the preceding, and yields, for the most part, to strong stimulating embrocations, a blister, active aperients, and Dover's powder, in full doses, taken at bed-time.

Rheumatism of the thoracic parietes is called pleurodyne, or bastard pleurisy. It is to be distinguished from true pleurisy by the character of the pulse, and the absence of constitutional derangement. It is a very transient form of rheumatism, best combated by the warm bath, and frictions with the following anodyne liniment:—

℞ Linimenti saponis compos.
——— camphoræ, *sing.* ℥j.
Tincturæ opii, ʒss. Misce.
Fiat linimentum.

CHAP. XVI.

OF THE GOUT.

Its Pathological Connection with Rheumatism. Division into Acute and Chronic Gout. Symptoms of Acute Gout. Of Chronic or Irregular Gout. Predisposition to Gout. Exciting Causes of Acute Gout. Proximate Cause of Gout. Principles of the Treatment of Gout. Prophylaxis.

GOUT is a disease, which, though possessed of many peculiar characters, is yet intimately associated, in a pathological view, with rheumatism. It is scarcely, indeed, two hundred years since they were first accurately distinguished.* But though the diagnosis is very important, and has contributed essentially to the elucidation of this branch of pathology, still it must not be forgotten, that a close affinity subsists between these diseases, that they run into each other by insensible degrees, and that the term *rheumatic gout*, so frequently employed in common life, is at the same time strictly scientific. The general features of resemblance between gout and rheumatism may be traced in the identity of the structures which are attacked, in the similarity of the terminations of the two diseases, and in their mutual tendency to affect some internal organ by metastasis. The leading points of difference between them are to be found in the joints principally affected, in the progress of the symptoms, in the *predisposing*, and lastly, in the *exciting* causes. All these circumstances are well expressed in Dr. Cullen's excellent definition of gout, which is in these words:—

"An hereditary disease, arising without any obvious external cause, but preceded by some unusual disturbance of the stomach; fever; pain affecting some joints, but especially those of the feet and hands; returning at intervals, and for the most part alternating with affections of the stomach, or of some other internal structure."

No subject in the whole extent of medical science has been investigated with such attention as the gout; and by no one certainly has that investigation been prosecuted with so much success as by Dr. Cullen.

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* The term *rheumatism* was first employed, and the disease separated from the *arthritis* of old authors, by Ballonius, in his Treatise "De Rheumatismo et Pleuritide dorsali." 1642.

PHENOMENA OF GOUT.

Gout, in its regular form, is a genuine inflammatory affection of the fibrous membranes, running a defined course, and attended by the common symptoms of inflammatory fever. This is the regular or acute species of the disease. In a large proportion of cases its attack is confined to a single joint, and that one the first of the great toe. But, as in other inflammatory affections, there is here also a chronic form of the complaint, called in common language the *irregular* gout; and to this a third variety may be added, which occasionally supervenes upon both the other species,—I mean the *retrocedent* gout, where a metastasis takes place to some internal organ, giving rise to symptoms either of visceral congestion or of inflammation.

Symptoms.—An attack of acute gout sometimes comes on suddenly, without any warning, but for the most part it is preceded for two or three days by symptoms indicating general disturbance of the system. The principal of these are lassitude with depression of spirits, coldness of the feet and legs, numbness, with a sense of pricking or itching in the lower extremities, cramps of the muscles of the legs, an irritable state of the bladder, but chiefly a great degree of disturbance in the functions of the stomach, indicated especially by flatulence, heartburn, and loss of appetite. There are present also symptoms of fever; such as disturbed sleep, scanty and high-coloured urine, cough with expectoration of mucus, and a costive state of the bowels. The attack of local inflammation commonly takes place about two or three o'clock in the morning, with more or less shivering, succeeded by the common symptoms of pyrexia, and almost always with intense pain of the joint. In a few hours the joint becomes swelled and red, and very painful to the touch. The feverish symptoms continue for three or four days, generally exhibiting the usual exacerbation towards evening. The redness and swelling then gradually abate; and as the disease wears off, it leaves the patient, not as in common fever, weak and debilitated, but enjoying better appetite and better spirits than he had experienced for some time before.

Recurrence of gout.—But this is only a *paroxysm* of gout. The disposition to recur, frequently too at regular intervals, constitutes another, and a most important feature of the disease. By degrees these intervals become shorter, and the paroxysms themselves more severe; and while the constitution falls more and more under the influence of the disease, it makes corresponding encroachments in respect of the parts which it attacks. At first, it confines itself to a single joint of one foot; by degrees it affects several joints, and both feet, either together, or in succession; and at length its ravages extend to every joint of the body. When it has subsisted for a certain time, a saline matter is thrown out by the inflamed vessels, and deposited upon the periosteum, the ligaments of the joints, the cellular membrane around them, the bursæ mucosæ, and even in some cases between the cutis and cuticle.* This accumulates after repeated paroxysms, so as to obstruct, during the intervals of health, the motions of the joint, and, when fresh inflammation supervenes, to aggravate very considerably the sufferings of the patient. It is sometimes effused in such quantity as to occasion concretions of a large size, tedious ulcerations about the joint, or even complete anchylosis. The matter has been found, by analysis, to consist of the urate of soda. For this discovery we are indebted to Dr. Wollaston.†

Chronic gout.—In the chronic or irregular gout, the symptoms do not follow that defined course which is witnessed in the acute species of the disease. The appearances of external inflammation are slighter, but there is equal or even more œdema, and always so much weakness of the neighbouring muscles, that the motion of the joint is greatly impaired. Sometimes it leaves the joint first attacked, and fixes on some distant part; or, after harassing the patient by affecting different joints in succession, returns to that in which it was originally seated. With these local symptoms are conjoined a variety of others, indicating general constitutional disturbance, such as feelings of languor and dejection, cramps in different parts of the body, particularly distressing at night, palpitation, costiveness, heartburn, a chronic cough, and, in the worst cases, wasting, with that general depravation of the whole habit which is commonly called *cachexia.*

Retrocedent or metastatic gout.—The retrocedent gout is that form of the disease where, during the existence of the more usual symptoms, some internal organ becomes affected. The stomach, intestines, heart, and brain, have at different times been observed to be the seat of retrocedent gout. Some differences of opinion exist as to the precise nature of the affection in cases of this kind. The symptoms, in many instances, warrant the suspicion of *inflammation*; but it is doubtful if this holds good when the stomach or the brain are attacked.

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* Vide "Moore on Gouty Concretions or Chalkstones." Med. and Chir. Transactions, vol. i. page 112.

† Philosophical Transactions, 1797.

Prognosis.—A regular fit of the gout is so far from being a disease of danger, that it is considered by many as the precursor of health and strength. It would be, perhaps, fortunate for gouty persons if there were less foundation for this opinion; for, under such an impression, a system is too often pursued, which, in the first instance, rivets the disease in the constitution, and ends by undermining it.

PATHOLOGY OF GOUT.

Hereditary predisposition.—There are several very important considerations connected with the causes of gout, predisposing and occasional; and among them the first in point of pathological interest is the influence of hereditary predisposition. This principle is now for the first time brought under consideration; but it is one of extensive application, and will hereafter be adduced to illustrate the pathology of some of the most important diseases of the body, such as scrophula, epilepsy, mania, and asthma. It may be stated as a general principle, that such an hereditary predisposition as we have supposed to exist, both in reference to these diseases and to gout, may be assisted by different circumstances, or it may be so far counteracted by others, as that it never shall exert during life any influence in the production of disease. Persons, too, without hereditary disposition, may *acquire* the gout, or any other of the complaints associated in this respect with it; so that, as a doctrine in pathology, it must be received with limitations; but it is not on that account the less certain or important. Hereditary predisposition is greater or less, according as it is on the side of both parents, or of one only. Attempts have been made to estimate the proportion which the cases of acquired gout bear to those where an hereditary tendency can be traced; but the calculations that have hitherto appeared are far from being satisfactory.

Remote causes.—Gout chiefly prevails among men. This is not to be ascribed to any peculiar exemption which the female sex enjoys from gout, but to a difference in those habits of life which contribute to the development of the disease. Where the gout appears in women, an hereditary predisposition to it will probably be met with, both on the father's and the mother's side. A gross and corpulent habit of body, with fulness of the veins, and a relaxed or loose state of the solids, is observed to give a tendency to gout. The same remark, however, may certainly be extended to acute rheumatism. The exemption of youth from gout is a striking character of the disease, as was long since urged by Hippocrates. Dr. Heberden,* whose experience in gout was probably more extensive than that of any physician who ever lived, never saw an instance of the disease before puberty. It seldom, indeed, appears before the age of thirty-five.

But of all the circumstances which give a tendency to gout, next after hereditary predisposition, the most important are, 1. Full living, and especially the free use of animal food; 2. An habitual indulgence in wine; and, 3. Inactivity of body. The gout, therefore, is almost wholly unknown among persons employed in constant bodily labour, and chiefly supported upon vegetable aliment. It has been attempted by several writers to estimate the relative degree of importance which should be attached to each of these three remote causes of the disease, and pathologists generally attribute to the free use of *wine* the principal share in the production of gout. Van Swieten states that the gout was unknown in Holland till wine was substituted for beer. This doctrine, however, admits of some doubt. The disease occurs frequently in certain classes of persons in this country, where an indulgence in animal food and inactivity of body can alone operate. I am inclined to think, therefore, that these, if they have not a superior, have at least an equal share in the production of gout in the upper ranks of life. They all concur in producing that plethoric state of the body, on which the predisposition to gout appears mainly to depend.

Exciting causes.—The exciting causes of the gout, or those which more immediately bring on a paroxysm, are such as in a plethoric habit of body induce a state of weakness, or irritability. Of these the most common are indigestion, produced either by the quantity or quality of the aliment; intemperance, particularly in the use of *acescent* wines, such as champagne and claret; excess in venereal pleasures; intense application to study, with night watching; mental anxiety; excessive evacuations; cold, especially when applied to the lower extremities; severe exercise, so as to occasion fatigue; sprains and contusions; and lastly, very sudden changes in the manner of living, not only from a low to a full diet, but what is important also in practice, from a full to a very spare diet.

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* Commentarii de Morbis, page 33.

Proximate cause of gout.—This branch of the subject has been studiously investigated by almost every writer on the disease. The favourite doctrine has been, that gout depends upon a certain *morbific* matter, always present in the body, which, thrown out upon the joints or other parts, produces the several phenomena of the disease. By some, even of the latest writers on gout, this theory has been supported, and the morbific matter has been pronounced to be an *acid.* Many ingenious arguments have been brought forward in its favour, but the doctrines of the humoral pathology have fallen into oblivion, and, in this instance at least, scarcely merit revival. With respect to the analogy between gout and gravel, sufficient evidence has been adduced to render it probable that a pathological connection really subsists between these diseases; but its precise nature is not ascertained.

TREATMENT OF GOUT.

The principles of treatment in gout are in all important points the same with those which obtain in other inflammatory affections, more particularly in rheumatism. The great peculiarity is, that the paroxysm of local inflammation, not being attended with danger, may be to a considerable degree disregarded; while the efforts of the practitioner should be steadily exerted during the intervals of the paroxysms, to prevent their recurrence, by a due attention to the predisposing and exciting causes.

Treatment of acute gout.—In a paroxysm of acute gout, the antiphlogistic regimen is to be enforced, the bowels are to be kept open by cooling laxatives, and saline draughts may be given at proper intervals. The efficacy of colchicum, in checking the first approach of a fit of the gout, and moderating its violence when it has come on, is established by very ample observation. For this purpose the following draught may be recommended—

℞ Ammoniæ subcarbonatis, gr. xv.
Succi limonum, ʒiv.
Vini colchici, ♏xxx.
Syrupi mori, ʒj.
Aquæ, ʒvij. Misce.
Fiat haustus sextis horis sumendus.

It is seldom that general measures of greater activity than these are called for. With regard to local treatment, experience has fully proved that patience and flannel may safely be trusted to. Leeches and linseed meal poultices are occasionally requisite. Cooling lotions sometimes afford relief; but there are instances in which any application of cold to the affected joint aggravates pain, and increases the tendency to metastasis.

Treatment of chronic gout.—Cases of chronic or irregular gout are to be treated according to the symptoms which may arise; but no attempts should be made, by the liberal use of wine, or by local irritants, to bring on the acute state of the disease. A light diet, and regular moderate exercise, with laxatives, absorbents, and the occasional use of bitters, so as to improve the tone of the system, and regulate the functions of the stomach and bowels, will be requisite in this form of the complaint. Where an internal organ is attacked, constituting the retrocedent species of gout, the treatment is to be conducted upon the same principles as are applicable in a corresponding idiopathic affection of the part.

Prevention of gout.—In the intervals of the paroxysms, the great objects of attention are *diet* and *exercise*. There is high authority for saying, that the gout may be entirely prevented by constant bodily exercise and a low diet; and this, not only where an hereditary predisposition exists, but even where that disposition has already manifested itself by paroxysms of the disease. To ensure, however, the success of these measures, care must be taken to avoid the exciting causes formerly enumerated.

It has always been an object of interest to discover some medicine that might obviate the necessity of any restraint upon the diet or regimen of the patient; and at different times remedies have been extolled for the *effectual* prevention of the gout. The principal of these are, aromatic and bitter tinctures, combinations of bitter powders, and various forms of alkaline and testaceous medicines. One of the most celebrated of them was called the Portland powder, which for many years enjoyed the highest reputation as a prophylactic of gout. Their real efficiency, however, is very trifling. Although they may have succeeded, for a time, in warding off a fit, they are incapable of effecting any such change in the constitution as may altogether prevent the recurrence of the disease.

CHAP. XVII.

ERYSIPELAS.

Idiopathic Erysipelas. Premonitory Symptoms. Progress. Its tendency to affect some internal Organ. Prognosis. Causes of Idiopathic Erysipelas, predisposing and occasional. Question of its Origin from Contagion. Principles of Treatment in the Idiopathic Erysipelas. Of the external Treatment.

Having already offered an opinion regarding the general pathology of erysipelatous inflammation—that is to say, having attempted (page 182) to point out its seat, its relation to phlegmon, and the peculiarities which distinguish it, I have now to detail the symptoms, causes, and principles of treatment of that idiopathic ailment to which the term ERYSIPELAS has been considered more peculiarly to apply. The general character of this disease corresponds perfectly with that form of the affection which is familiar to surgeons, as arising from burns and scalds; and as the frequent consequence of wounds, punctures, operations, compound fractures, and the application of leeches, blisters, poisonous or other acrid matters, to the skin. Many of the observations, therefore, which I shall have to offer on the *idiopathic* erysipelas, apply equally to the other forms in which this species of inflammation appears; but it will be more consonant to the general design of this work, to confine my attention to that form of the complaint which, arising from internal and often very obscure causes, falls more exclusively under the cognizance of the physician.

ERYSIPELAS FACIEI.

There is no portion of the surface exempt from attacks of erysipelas, but when it arises from internal causes, it commonly shows itself on the *face*, or on the *legs*. Erysipelas faciei is at once the most common and the most formidable affection.

Nosologists have been at pains to distinguish between erysipelas, and that slighter disease already described under the title of erythema, but the distinction is one of no practical importance. By erysipelas the physician understands a spreading inflammation of the skin, ending in a blister, and accompanied by decided evidences of constitutional disturbance. Erythema is redness without sympathetic fever, and not advancing to vesicle.

Symptoms.—Spontaneous or idiopathic erysipelas, whether of the face, trunk, or extremities, is in almost all cases ushered in by rigors, succeeded by nausea, bilious vomiting, restlessness, and febrile symptoms of considerable severity. The pulse is always frequent, 96 to 110, and commonly full and hard. The countenance is expressive of much anxiety. Cynanche tonsillaris is often present, and in the opinion of Mr. Arnott, this constitutes an important feature in the incubative stage of the disorder. The functions of the brain are always much disturbed during the initiatory fever of erysipelas; and drowsiness, or confusion of the head, amounting in some cases to delirium, accompanies the hot stage.

On the second, or, at farthest, on the third morning, from the attack of rigor, redness and swelling appear on some part of the skin, very frequently on one side of the nose, spreading rapidly to the rest of the face, or extending over the scalp, neck, and shoulders. There is a distressing sense of heat and tingling in the inflamed surface. The whole face becomes turgid, and within twenty-four hours from the appearance of inflammation, the eye-lids are commonly closed. Fever, varying in severity, according to the extent of the local inflammation, accompanies the disorder through its whole course. In some instances the disease goes off simply by desquamation of the cuticle, but more usually, after a certain time, blisters arise of different sizes, containing a thin yellowish or transparent serum, which speedily burst, and leave the skin, in that part, of a livid colour. In some places purulent matter forms, and this is very frequently observed to happen in the loose cellular membrane of the eye-lids. A disposition to œdematous effusion is not uncommon, and under certain circumstances erysipelas verges to gangrene; but this is rarely observed, except where it occurs as a consequence of severe injuries.

The duration of the disease is liable to considerable variation. In young persons it commonly terminates in six or seven days; but in those more advanced in life, it is often protracted to the twelfth day, or even later. The febrile symptoms do not always cease with the subsidence of external inflammation. In the progress of the disease, and especially towards its latter stages, they assume, in many cases, a well-marked *typhoid* character; and great debility always characterizes the period of convalescence.

Metastasis to the brain.—The tendency of erysipelas to spread to some internal organ, is a circumstance in the history of the disease of the utmost importance. It is the great source of *danger* in idiopathic erysipelas, and it regulates, in no inconsiderable degree, the treatment. Pleurisy or severe bronchial inflammation have been observed in some cases; but the brain is the organ chiefly liable to be affected. There appears, indeed, to be some peculiar and hitherto unexplained connection between erysipelatous inflammation and disease of the brain. The symptoms are those of phrenitic inflammation; and some of the purest specimens of phrenitis met with in this country arise from the extension of erysipelas faciei. In certain cases the inflammation of the skin abates when the affection of the brain supervenes; in others, the internal and external inflammation proceed together.

Prognosis.—Under common circumstances, erysipelas is not a disease of danger, but there are occasions, especially when its seat is the face, when the prognosis should be carefully guarded. If accompanied with much tumefaction of the scalp and delirium, the danger is extreme, and death takes place by coma. In persons of advanced life, and of weak habit, erysipelas often proves fatal by exhaustion. I have seen it induce a distressing and ultimately fatal irritability of stomach.

Causes.—The causes of idiopathic erysipelas are not well understood. There is, in some persons, a strong disposition to this kind of inflammation; and in them it is brought on by very trifling causes. Such a disposition appears, in some families, to be hereditary; and it may possibly depend on a peculiar organization of the skin. To the latter circumstance we may, perhaps, refer the greater prevalence of the disease among females. It is certainly a very remarkable fact, that while the erysipelas *sometimes* attacks the robust and plethoric, it is, upon the whole, much more commonly met with among those who are constitutionally feeble, or who have been debilitated, either by some previous disease, such as typhus, scarlatina, or small-pox, or by long residence in a hot climate, or unwholesome diet, or impure air, as that of an hospital. It may occur at any age. There is a species of erysipelas which attacks new-born infants, particularly in lying-in hospitals and workhouses; * but it is chiefly the disease of adult life, and of old age.

Origin by contagion.—The discussions regarding the contagiousness of erysipelas, have been as keen as on every other occasion in which the doctrine of contagion is involved. Dr. Wells † has collected several examples of the communication of erysipelas by contagion in private families; and in my own practice this fact has been most strikingly exemplified. In hospitals, it is well ascertained that it frequently spreads by contagion, particularly where there is a defective or *ill-regulated* system of ventilation. Admitting this, I think at the same time it cannot be questioned, that erysipelas prevails at some seasons, and under certain circumstances of the air, more than at others. What the peculiar conditions of the atmosphere are, which dispose to erysipelatous inflammation, have not, however, been determined.

The occasional causes, independent of contagion, or hospital miasms, to which *idiopathic* erysipelas is commonly attributed, are cold applied when the body is overheated, intemperance, violent exercise, and exposure to strong heat. Damp floors have been accused, and I believe with justice, of creating the erysipelas of hospitals. In many cases no exciting cause of any kind can be traced, and it is strictly a *spontaneous* disease, attributable, as the ancients would have said, to some morbid condition of the blood and humours of the body.

Treatment.—The treatment of erysipelas has proved a fertile theme of controversy. It has been supposed, that the common principles applicable to other inflammatory diseases are inapplicable here; but the supporters of this opinion do not seem to have taken into consideration the variety of causes from which erysipelas originates, and the almost infinitely varied circumstances of situation, age, and constitution, under which it appears. Keeping these in view, it does not appear that any important difference of principle is to be established between the treatment of erysipelatous and of common phlegmonous inflammation.

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* See Dr. Garthshore, in Medical Communications, vol. ii. page 28.

† Transactions of a Society for the Improvement of Med. and Chir. Knowledge, vol. ii. art. 18.

1. In the acute idiopathic erysipelas of the face, occurring to a stout plethoric young man, blood is to be taken from the arm, to the extent of sixteen ounces, and repeated if necessary. It is very seldom, however, that a repetition of the bleeding is required.

2. When the system does not admit of the loss of blood from the arm, great benefit is often experienced from the detraction of *surface blood*, either by means of leeches, scarifications, or free incisions. This practice is eminently beneficial in erysipelas of the trunk and extremities, but it is also applicable, though less frequently, to erysipelas of the face.

3. Purging is a means of diminishing local excitement, well adapted for all the forms and modifications under which erysipelas shows itself. It will prove an useful auxiliary in those cases which demand the general or local abstraction of blood, and the chief reliance of the physician where erysipelas occurs under circumstances less decisive of the inflammatory nature of the accompanying fever. The best forms of purgative medicine in erysipelas are, calomel with rhubarb, calomel with jalap, senna with the sulphate of magnesia, and castor oil. Three grains of calomel with a scruple of rhubarb is that which, after repeated trials, I should be inclined to recommend for general adoption.

4. When erysipelas occurs to aged people, and in debilitated habits; when it originates decidedly from contagion; when it happens in an hospital, to persons suffering under, or recovering from, a tedious illness; when it is attended by a feeble pulse, a brown tongue, and a disposition to gangrene, the system is to be supported (perhaps even from the very first) by bark, aromatics, the volatile alkali, and wine. The following draught may be recommended under these circumstances:—

℞. Decocti cinchonæ, ʒx.
Confectionis aromaticæ, ℈j.
Tincturæ cinchonæ compositæ, ʒj. Misce.
Sumat haustum quarta quaque hora.

Occasionally it is useful to combine the bark with a saline diuretic, as thus:—

℞ Decocti cinchonæ, ʒvij.
Liquoris ammoniæ acetatis, ʒij.
Spt. ætheris nitrosi, ʒj. Misce.
Fiat haustus quartis horis repetendus.

5. When the phrenitic inflammation supervenes as a consequence of erysipelas, it is to be treated by venesection, blisters, and purgatives, not regulated by any consideration of the *cause*, or peculiar nature of the affection, but merely by the state of the pulse, and character of the accompanying fever.

6. *External treatment.* — Different external applications have been proposed in erysipelas, such as cold lotions, warm narcotic, and spirituous fomentations, and dry powders. Their influence upon the disease does not appear to be very great; and, therefore, that one should be selected which best relieves the heat and uneasy sensation which the patient experiences. The following spirituous lotion (applied either cold or warm) will commonly be found to answer this purpose.

℞ Spt. vini rectificati, ℥ij.
Liquoris ammoniæ acetatæ, ℥iij.
Aquæ rosarum, ℥x. Misce.
Fiat lotio.

The application of dry powders (such as hair-powder, dried flour, starch, or oatmeal,) is advisable only in mild cases. When the secretion is profuse, they irritate and heat the skin. Indeed in many cases of the severe idiopathic erysipelas, it is rather advisable to refrain altogether from local applications. When there is a tendency to gangrene, lotions containing camphorated spirit prove serviceable, by supporting the tone of the vessels.

Blisters to the erysipelatous surface have been applied in a few instances, but without any well marked advantage. Such a practice cannot be recommended on theoretical principles. As little can be said in favour of the plan of covering the inflamed surface with mercurial ointment.

CLASS IV.

HÆMORRHAGIES.

CHAP. I.

GENERAL DOCTRINE OF HÆMORRHAGY.

Character of the order of Hæmorrhagies. Of General Hæmorrhage. Varieties of Local Hæmorrhage. Connection of Hæmorrhage with Fever. Anæmia. Hæmorrhage with Plethora. Hæmorrhage from Congestion and Inflammation. Hæmorrhagic Diathesis. Sources of Hæmorrhage; Arteries; Veins. Recurrent and Vicarious Hæmorrhage. Its dependance on the weight of the Atmosphere. Treatment of Hæmorrhage.

The diseases comprised in the order of hæmorrhagies are, in every point of view, much less interesting than the inflammations. They are of less frequent occurrence, and seldom met with in an idiopathic form. Indeed, it is only by a stretch of nosological refinement that they can be considered in the light of a distinct order of diseases. The rupture of a blood-vessel is not necessarily connected with a train of other symptoms, and is therefore itself rather an accident or a *symptom*, than a state of disease. While engaged in the investigation of the phlegmasiæ, we were content to refer the phenomena to the presence of *inflammation*. In the class of hæmorrhagies, we must always look to something beyond, and endeavour to determine upon what ulterior cause the rupture of the vessel depends.

The general doctrine of hæmorrhagy has, nevertheless, always excited attention in the schools of physic; and much learning has unquestionably been shown in investigating the principles which it involves. Dr. Cullen's dissertation on this subject must be considered as a remarkable specimen of acute pathological research; but these discussions, not having the same influence on practice with some of those which have been already before us, do not require the same attention from the student, and will therefore be only briefly alluded to in this place. Without venturing upon those abstruse theoretical speculations concerning hæmorrhagy, in which some authors have indulged, it may, however, not be altogether uninteresting to notice the principal points which have been thought of importance; and this more particularly, as it will afford an opportunity of exhibiting, in a connected view, several diseases included in this order, the particular consideration of which will be taken up in future parts of the work. Although there may not prove to be many points of analogy among them, it will not be the less useful to notice the principal circumstances in which they differ, and above all, the various, and even opposite, states of the system in which they occur.

General hæmorrhage.—Hæmorrhagies may be divided, in the first place, according as they are general or local. A general disposition to hæmorrhagy is not common; but it occurs in scurvy, and in a disease of a very singular kind, known by the name of the *hæmorrhæa petechialis.* The pathology of this affection is but little understood. Different speculations have been thrown out concerning it, which will hereafter come under our notice, when considering the class of chronic constitutional diseases; but for the present, it may be sufficient to state, that it appears to be wholly different from scurvy, that it has some obscure connection with disease within the thorax, and that it is occasionally to be treated by antiphlogistic measures. A general disposition to hæmorrhagy occurs also in many acute diseases, more particularly in different forms of inflammatory and typhoid fever; also in the malignant exanthematous fevers.

Varieties of local hæmorrhage.—Local hæmorrhages may be arranged according as they happen in one or other of the three great cavities or divisions of the body. Hæmorrhagy from the vessels of the head occurs either as *epistaxis,* or as *apoplexy;* diseases which have, in some cases, an important pathological connection. Hæmorrhagy from the thorax is denominated *hæmoptysis.* Hæmorrhagy from the abdominal cavity assumes the several forms of *hæmatemesis, melæna, hæmorrhois, hæmaturia,* and *menorrhagia.* Two or more of these forms of local hæmorrhagy are occasionally present at the same time, illustrating strongly the importance of the general doctrine of hæmorrhagy, and showing that hæmorrhages, even the most partial, or apparently accidental (such as that which sometimes follows the extraction of a tooth), are yet connected with a morbid condition of the *whole* arterial system, which is unable to preserve its surface unbroken. Hæmorrhages may take place from all structures,—from muscular structure, as in the uterus; from cellular structure, as in the lungs and brain; but it is chiefly met with from mucous structure. All the principal hæmorrhages are of this kind:—Epistaxis, hæmoptysis, hæmatemesis, hæmaturia, and hæmorrhois.

Connection of hæmorrhage with fever.—From the situation assigned to hæmorrhagic diseases in most systems of nosology, symptoms of *fever* might be expected; but one of the most important considerations in the general doctrine of hæmorrhagy, is the frequency of its occurrence without any evidence of febrile excitement existing in the system. In some cases, hæmorrhagy is preceded by rigors; and during the flow of blood the pulse is frequent, full, or even hard, the skin is hot, and there is thirst and restlessness. At other times, hæmorrhagy exists with a state of general constitutional debility, and arises from causes that obviously weaken the tone of the system; as is well exemplified in some of the cases of menorrhagia. These facts have long been known; and they have given rise to one of the oldest pathological distinctions among hæmorrhagies; *viz.*, into the *active* and the *passive.*

Anæmia.—In many cases of hæmorrhage, the loss of blood is very rapidly supplied, and therefore recurring hæmorrhage is sometimes set down as a cause of *plethora.* But far more commonly, hæmorrhage occasions a great drain from the system, and, when long continued, a very alarming state of constitutional weakness. The blood degenerates into a state of morbid tenuity. It is rather bloody serum than blood. Even in the heart itself but little crassamentum will be found. This condition of the fluids is generally known by the name of *anæmia,* and it sometimes exists independent of hæmorrhagy, being brought on by deficient or unwholesome food, imperfect digestion, or constitutional debility. Its symptoms are, a pale and bloodless countenance, great weakness, palpitation, disposition to syncope, loss of appetite, indigestion, swelled legs, and a pulse, weak, tremulous, and intermitting. It is most commonly witnessed in women suffering under cancer uteri, and its attendant hæmorrhagy.

In estimating the circumstances which may lead to the accidental rupture of a vessel in an internal part, there are three which chiefly merit attention. The first of these is the quantity of blood in the body; the second is the force of the heart's action (these two constituting the impetus, or *momentum* of the blood); and the third is the strength of the coats of the containing vessel, depending principally on the *original* constitution or structure of the body. By one or other of these considerations, we may explain the manner in which different circumstances act as the predisposing or occasional causes of hæmorrhagy, and the *modus operandi* of the remedies which are resorted to for its relief or removal.

1. *Hæmorrhage with plethora.*—Plethora, or præternatural fulness of the blood-vessels, is a state of the body, the reality of which is established by ample, as well as the most simple evidence. It is the common consequence of full living, and of a sedentary life; and it proves a frequent source of disease. A man too full of blood becomes heavy and languid. A state of over-distension in vessels gives a disposition to increased action in them; hence it is, that whatever leads to *general plethora*, is so frequently found to be a predisposing cause of inflammation, and of hæmorrhage, and even of fever. It will be remembered, however, that a state of plethora is by no means essential to hæmorrhage, which is compatible even with a state of morbid tenuity of the blood.

2. *Hæmorrhage from congestion.*—The connection of hæmorrhagy with the state of partially increased action of vessels, or irregular determination of blood, or, as it is now more commonly called, *local congestion*, has always been recognised in pathology. The principle itself is of the highest importance; and it is undoubtedly the most generally applicable of any which have been established in the whole extent of pathological science. We have seen it influencing the phenomena and treatment of every form of idiopathic fever. It is the very basis of all reasoning on the subject of inflammatory action; and we shall subsequently find it to extend to many of the most important chronic diseases of the body. In what

manner this local determination of blood is brought about,—how it is that the heart, which appears calculated to supply blood equally to all parts of the body, should distribute it unequally, are questions which the inquiries of physiologists have not, hitherto, enabled us to decide. The fact itself, however, is well ascertained, and shows that the doctrines of hydraulics afford but little help towards explaining the circulation of the blood.*

With this doctrine of local congestion, that of hæmorrhagy is closely connected, as will hereafter be illustrated in several ways; by the phenomena, for instance, of epistaxis and apoplexy; by the effect of posture in favouring different forms of hæmorrhagy; by the influence of heat and violent gymnastic exercises, and running, and long continued exertions of the lungs in singing, or loud or long speaking, in bringing on a fit of hæmoptysis; but more than all, by the appearances found on dissection of those who die of hæmoptysis. A circumscribed portion of lung is then observed to be gorged with blood.

Hæmorrhage with inflammation.—We have already seen, in the instance of dysentery and pneumonia, that the state of hæmorrhagy is sometimes dependent on that of *inflammation;* and there is reason to believe, that, in some other cases, the same pathological connection may subsist, although it be less apparent. The general analogy between these states of disease may be further traced in the similarity of their predisposing and exciting causes, in the effects of the *juvantia* and *lædentia*, and in the appearance of the blood drawn. In almost all cases of hæmorrhagy attended with symptoms of constitutional excitement,—that is to say, in all states of active hæmorrhagy, the blood drawn will appear buffy and cupped. This phenomenon was considered by Dr. Cullen of such frequent occurrence, as to merit notice in his definition of the order.

By some pathologists it has been conjectured, that the evolution of organs at different periods of life is one cause of those partial congestions of blood which take place in the body, and which, by over-distending a particular set of vessels, dispose them to rupture. It has generally been observed, that epistaxis is the hæmorrhagy of childhood; hæmoptysis, of the age of puberty; and that the abdominal hæmorrhagies occur in the more advanced periods of life. It is possible, that *many* circumstances contribute to this peculiarity in the phenomena of the hæmorrhagies; but the theory which ascribes it to a partial plethora from the evolution of organs has probably some foundation in nature.

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* See a very ingenious Essay by Mr. Charles Bell, entitled, "On the Forces which circulate the Blood, being an Examination of the Difference between the Motions of Fluids in living and dead Vessels." London, 1819.

3. *Hæmorrhagic diathesis.*—The third general condition of the body which was noticed as tending to hæmorrhagy, is a weakened state of the coats of the blood-vessels. This usually depends on original formation, and is not unfrequently hereditary. In some constitutions the arterial system appears to be peculiarly weak and lax; and this often occurs in persons of a scrophulous diathesis. In these habits, therefore, the blood-vessels will give way from the application of causes which would have no such effect in a different habit of body. They are unable to bear that degree of *distension* which the vessels of a strong man will support with impunity.

Hæmorrhagic exudation.—An idea is entertained by some pathologists, that mere *laxity* of the coats of vessels, independent of actual *rupture*, is sufficient to cause the effusion of blood. That the colouring particles of the blood may *exude* along with the secretions of the part in certain relaxed conditions of a membrane is probable; but it is questionable how far this corresponds with genuine hæmorrhagy. It is probable that in all cases where coagulating blood is effused, there has been an actual rupture of vessel, or what surgeons call *solution of continuity.*

Hæmorrhage, venous and arterial.—Hæmorrhagy may take place both from veins and from arteries; and frequent attempts have been made to explain what circumstances determine the one or the other of these events. It is generally admitted that arterial hæmorrhage is most frequent in early life, and venous hæmorrhage at an advanced age. This circumstance is believed to depend upon certain differences in the *relative density* of the coats of arteries and veins at different periods of life. The portion of the *venous* system most liable to hæmorrhagy is the vena portæ. This vessel appears to differ in structure, as it certainly does in distribution, and probably in function, from the other veins of the body, and to partake closely of the nature of an artery. We presume, that in hæmatemesis, and in certain cases of abdominal hæmorrhage, the rupture takes place in some of the branches of the vena portæ. Whenever there is a disposition to hæmorrhagy, either venous or arterial, it is reasonable to expect that the vessels will give way in that part where they are least supported by integuments, or surrounding muscular or ligamentous substance. Hence we may perceive, why hæmorrhages are so much more frequent from the lungs, and the vessels of the Schneiderian membrane, than from any other part of the body.

Recurrence of hæmorrhage.—A disposition in hæmorrhagy arising from internal causes, that is, idiopathically, to recur after certain intervals, and often at stated periods, is a remarkable but sufficiently ascertained fact. It is exemplified in the history of menorrhagia, hæmorrhois, and epistaxis. It is indeed one of the most general of the laws which regulate the phenomena of hæmorrhage. When hæmorrhages have recurred frequently, the system acquires a habit of relieving itself at particular times.

Vicarious hæmorrhage.—Connected with the recurrence of hæmorrhage, is that very curious doctrine in general pathology, the substitution of one hæmorrhagy for another. This is called the doctrine of vicarious hæmorrhage. The most familiar instances are presented by the occurrence of epistaxis and hæmatemesis in young women labouring under amenorrhæa. But it is sometimes exemplified in men, where hæmorrhage from the nose, or even apoplexy, have followed the accidental suppression of the piles.

Dependance of hæmorrhage on barometric pressure.—In an enumeration of the several circumstances which influence the occurrence of hæmorrhage, the weight of the atmosphere must not be omitted. It is obvious, that when the weight of the atmosphere upon the vessels is sensibly diminished, they will the more readily give way to pressure from within. The barometric changes in habitable countries, and under common circumstances, are too small to produce any such effect, but the ascent of the Andes has frequently been followed by hæmoptysis.

Treatment of hæmorrhage.—The general principles of treatment in hæmorrhagy must be varied to meet the varying circumstances under which it occurs. A very erroneous idea once prevailed in the schools, that hæmorrhagies were salutary efforts of nature, and that they were to be encouraged rather than checked. This originated, in part, from the temporary relief which the patient experiences from the discharge of blood; but the reasoning by which the doctrine is supported is vague, and the practice to which it leads, at least in the great majority of cases, dangerous. We may not always have it in our power to check hæmorrhagy, but we should at least attempt it.

The principal objects of treatment in cases of internal hæmorrhagy are four;—1. To diminish general plethora, where it exists; and in other cases, to remove local congestion and distension of blood-vessels. 2. To lessen the *vis a tergo*, or the force of the heart's action. 3. To induce the formation of a coagulum about the ends of the ruptured vessel; and 4. To bring on contraction of the muscular fibres of the vessel, and of the parts in its vicinity. Upon one or other of these principles may be explained the mode of action of each of those means, which have been found useful in the treatment of internal hæmorrhagy. They are, general blood-letting, leeches, digitalis, purgatives, cold, astringents (such as alum, the superacetate of lead, and the mineral acids), and lastly, opiates and tonics.

One of the greatest improvements which have resulted to the practice of medicine from the recent labours of the French pathologists is the more extensive employment of local blood-letting in the management of hæmorrhagy. The benefit of it is strikingly displayed in those severe hæmorrhages, hæmoptysis, and hæmatemesis, which the world generally associate under the title of the *rupture of a blood-vessel*.

The application of these principles to the treatment of the different hæmorrhages, and their adaptation to the several circumstances under which hæmorrhagy occurs, will become objects of inquiry hereafter. In this division of the work we shall treat of Epistaxis, and Hæmoptysis, being the only species of hæmorrhagy attended, in common cases, with *pyrexia*, and entitled to the character of *idiopathic*. The remaining disorders of this class will be considered among the chronic and local diseases.

CHAP. II.

HÆMORRHAGY FROM THE NOSE.

Symptoms of Epistaxis. Periods of Life at which it occurs. Exciting Causes. Epistaxis symptomatic of other Diseases. Treatment of Epistaxis, internal and external.

The vessels that ramify upon the Schneiderian membrane are very numerous, and, from their forming a net work, which is covered only by thin and delicate integuments, easily ruptured. The flow of blood from them, when it does not happen from accidental causes, is usually preceded by symptoms marking a determination to the head, such as throbbing of the carotid and temporal arteries, headache, flushing of the cheeks, giddiness, and a sense of weight, or fulness, in the nose; or by such as indicate a general state of increased action throughout the whole arterial system, as a quickened pulse, restlessness, disturbed dreams, thirst, diminished secretion of urine, and costiveness. The blood commonly flows from one nostril only; but often in quantity that may reasonably occasion considerable anxiety. Nor is it the occurrence of a single fit of hæmorrhagy which is alone to be considered. In almost all cases, it recurs for several weeks at irregular intervals, and often tends very materially to weaken the body.

Occurrence at different periods of life.—Epistaxis (for so this hæmorrhagy is called) happens equally to both sexes; and it may occur at all periods of life, but it is chiefly observed to prevail among young persons advancing to puberty. In this case it may be considered as one of the evidences of that irregular distribution of blood, which characterizes the period of puberty in both sexes, but especially manifests itself in the irritable constitution of the female. This principle in pathology will hereafter form the groundwork of our reasoning concerning the symptoms of *amenorrhœa.* The frequency of epistaxis at this period of life is very remarkable; and there can be no question, that if it be not excessive, it is productive of no particular inconvenience. In some constitutions it may serve to diminish plethora. If it recurs, however, with great frequency, and is very copious, it becomes an object of serious attention.

It is then commonly said to mark a state of arterial plethora. This is doubtful. It much more obviously points out a state of weakness in the original structure of the vessels of the body. It was an observation of Hippocrates, that persons subject while young to severe and obstinate bleedings at the nose, easily fall into dangerous diseases of the chest; more especially peripneumonies, hæmoptysis, and consumption.

Hæmorrhage from the nose occasionally occurs in the middle periods of life, but it is a rare event at that age. It is again frequently witnessed towards the decline of life, when it probably depends upon the same causes which lead to apoplexy and palsy.

Causes.—Among the exciting causes of epistaxis, pathologists have enumerated both heat and cold, and in different ways both may contribute to the occurrence of the hæmorrhagy. It frequently comes on without the slightest apparent cause, but is obviously attributable in other cases to exertions of the body, such as running, coughing, or blowing the nose. Particular postures favour it, as stooping, or lying with the head low. On this account, persons liable to epistaxis are frequently attacked by it on first waking. Epistaxis is occasionally to be traced to the suppression of some usual evacuation, especially in young women to the suppression of the menses. Under such circumstances, it has sometimes afforded relief to other symptoms.

Symptomatic hæmoptysis.—Hæmorrhagy from the nose is a symptom of different diseases; and as such, not less deserving of attention than when it occurs in an idiopathic form. It is met with in some of the severest cases of inflammatory fever, in low typhus, in the small-pox, and in several chronic diseases, as hooping-cough, and scurvy. After what was stated in the last chapter, it will be obvious, that in each of these cases, the occurrence of hæmorrhagy is attributable to different causes. In conjunction with other symptoms, epistaxis always affords an important index of the state of the system, and proves an useful guide in practice. It is a very old and just remark, that hæmorrhagy from the nose accompanies some forms of abdominal disease, particularly obstructions of the spleen. The obscurity in which the functions of that organ are involved, would alone prove an insurmountable obstacle to any attempt at an explanation of the phenomenon.

Treatment.—Idiopathic epistaxis, when it occurs in *young* persons, and not in an excessive quantity, is scarcely an object of medical treatment. A light diet, with an occasional dose of salts, however, will certainly be advisable. In severer cases, cold is to be applied to the head and back. Purging, regular exercise, early rising, and a diet strictly antiphlogistic, are then to be recommended. The following draught is well adapted to cases of hæmoptysis in the young:—

℞ Infusi rosæ compos. ʒx.
Acidi sulphurici diluti, ♏x.
Tincturæ digitalis, ♏x.
Syrupi, ʒj. Misce.
Fiat haustus ter in die sumendus.

In severer cases, attended with headache, giddiness, or lethargy, leeches should be applied to the temples, or blood taken from the back of the neck by cupping.

When epistaxis occurs in the middle, or more advanced periods of life, it is often excessive, and is associated with plethora, and high vascular excitement. It then frequently becomes necessary to use very active means. Blood must be taken from the arm even till the patient faints, or cupping glasses may be applied to the nape of the neck, and twelve or sixteen ounces of blood abstracted. The nostrils are to be plugged up, both anteriorly and posteriorly, by dossils of lint dipped in an astringent solution, such as the liquor aluminis compositus. The bowels are to be kept freely open, and a very spare vegetable diet rigidly enforced.

CHAP. III.

HÆMORRHAGY FROM THE LUNGS.

Circumstances under which Hæmoptysis chiefly occurs. Division of Hæmoptysis into bronchial and parenchymatous. Predisposition. Enumeration of exciting causes. Connection of Hæmoptysis with tubercular Phthisis. With structural disease of the Heart. Prognosis. Principles of Treatment.

The discharge of blood from the lungs is usually accompanied by symptoms denoting determination to that organ, amounting in some cases, perhaps, to actual inflammation. There is a sense of fulness, heat, weight, tightness, or oppression about the chest, increased on full inspiration, some uneasiness in breathing, and a short tickling cough. Symptoms of fever are also present, such as shiverings, pains in the back and loins, a flushed countenance, lassitude, costiveness, a dry skin, and a hard pulse; but these are subject to great variety. I have seen the pulse, for instance, feeble and indistinct, so as to be hardly perceptible. The spitting up of blood is commonly preceded by a degree of irritation felt about the larynx, and a saltish taste perceived in the mouth. The quantity of blood brought up is very various. A slight tinge of the expectoration is sufficient to characterize the disease, as it marks the hæmorrhagic tendency, and may quickly be followed by a gush of blood. Again, it is sometimes so profuse as to occasion alarm for the immediate safety of the patient. It commonly recurs for several days together, and is often renewed upon very slight exertions. The blood is of a florid colour and frothy.

To distinguish this disease from hæmatemesis, or vomiting of blood, is often more difficult than might be anticipated, owing to the occurrence of vomiting during the discharge of blood from the lungs; but in ordinary cases, an attention to the preceding symptoms, to the appearance of the blood, and to the general habit of body, will be sufficient to establish the diagnosis.

Division of hæmoptysis into bronchial and parenchymatous.—The immediate source of the expectorated blood has, within the last few years, occupied much of the attention of pathologists. Laennec has instituted a division of hæmoptysis into two kinds, the bronchial and parenchymatous. Bronchial hæmorrhage is considered by him as simple exhalation of blood from the bronchial membrane, and the slightest cases of hæmoptysis he considers to be usually of this kind. The severer kinds are dependent upon an engorgement of a portion of the *substance* of the lung, differing, as he states, in its nature from the hepatization of peripneumony, and equally distinguishable from the congestions that take place from mechanical causes after death. In the case of hæmoptysis, the indurated portion appears, on dissection, accurately *circumscribed*, of a dark red colour, like a clot of venous blood, and perfectly homogeneous. Laennec has distinguished this by the name of Pulmonary Apoplexy, from its resemblance to the effusion that takes place in the brain.

Such are the anatomical characters and divisions of hæmoptysis. To a certain extent they are highly important, and are susceptible of a direct application in practice. Whether there be actual rupture of blood-vessel, or only exudation in the bronchial (or mucous) hæmoptysis, is a more doubtful point, the decision of which is of no practical moment. The student, however, will understand that these varieties of hæmoptysis arise from the same causes, and acknowledge, in almost all respects, the same general laws.

Predisposition to hæmoptysis. — Among the many important considerations connected with hæmoptysis, are those which relate to its predisposing and exciting causes; for by these we are to form our judgment of the probable termination of the disease, and be in a great measure guided in our method of treatment. Of the former, however, one only can be considered as under our control, and that one the least frequent of the whole;—I mean, *plethora* of the system generally. The simple rupture of a blood-vessel in the lungs, from fulness of blood and increased action, either within the chest, or throughout the body, independent of any external injury, or of any pre-existing disease of the lungs, is sometimes observed, but it is unquestionably a rare occurrence; and this must surely be a matter of surprise, when we reflect how numerous and how large the blood-vessels of the lungs are, and by what a very delicate membrane they are covered and supported. Under such circumstances, however, hæmorrhagy may occur from the lungs, as from the vessels of the Schneiderian membrane. By rest and low diet the ruptured vessel would soon heal, without any further bad consequence.

2. The second predisposing cause of hæmoptysis is the *scrophulous diathesis*, or that habit which is marked, among other peculiarities, by a general delicacy of structure throughout the body—light and thin hair, a smooth and soft skin, a lax muscular fibre and slender form. Of this delicacy of structure the blood-vessels appear to partake; and consequently a disposition to *hæmorrhagy* becomes also a character of scrophula. That it should particularly appear in the lungs, might be conjectured from the peculiarities of their structure. It is

necessary, however, to add, that weakness of the vessels of the lungs, disposing them to rupture, is often met with independent of scrophula. Hence it happens, that some persons spit blood from any cause that weakens the body generally. The hæmoptysis of scrophulous habits is considered by Laennec as being, for the most part, of the bronchial or mucous kind; while that which occurs in plethoric habits is dependent upon engorgement of the lungs,—that is to say, is of the parenchymatous kind.

3. The third circumstance giving a predisposition to hæmoptysis is *period of life*. It rarely happens to children under the age of twelve years, and is not frequent after that of five-and-thirty. It chiefly prevails between the ages of fifteen and twenty-five. Pathologists have attempted in several ways to explain this circumstance. It has been said to depend upon the growth of the thorax continuing, after other parts of the body have been fully evolved, manifested by the increased width which the chest acquires at that period of life. Dr. Cullen has imputed it, in part at least, to a want of due balance between the aortic and pulmonary systems, which must chiefly be felt at that age when the former has arrived at its utmost extension and resistance. To whatever cause it is to be ascribed, there can be no question as to the general correctness of the position, that this particular period of life gives a remarkable predisposition to hæmorrhagy from the lungs.

4. The fourth predisposing cause of hæmoptysis is *malformation of the chest*, which obviously acts by preventing the due expansion of the lungs. Persons who have suffered in early life from rickets, to such an extent as to affect the spine or ribs, are very liable at another age to hæmoptysis. The scrophulous habit of body is characterized by prominent shoulders and a narrow chest; and this is one, among other reasons, why the scrophulous diathesis is so frequently accompanied by a tendency to hæmoptysis, upon all occasions which impel the blood with any degree of increased impetus upon the vessels of the lungs.

Exciting causes.—These are very numerous, some acting more immediately upon the lungs, and some indirectly through the medium of the general system. Among the exciting causes of hæmoptysis, which act directly upon the weak blood-vessels, the most important are, external injuries; violent exercise of the whole body, as in running, or wrestling; or of the lungs in particular, as in loud or long speaking, playing on wind instruments, or glass-blowing. Those which act indirectly are full living, and particularly the free use of wine; alternations of atmospheric temperature, and occasionally, perhaps, of atmospheric pressure; sudden exposure to cold after being overheated; the suppression of usual evacuations; more especially in women the suppression of the menses. It has been said, that the amputation of a limb has, in some cases, occasioned an attack of hæmoptysis. It is much better ascertained, that it may arise from any circumstance which weakens the body generally, and makes the circulation irregular. Hence it has often, and justly, been imputed to extreme grief and mental anxiety,* great fatigue of body, and a succession of sleepless nights.

Two other circumstances of great importance in the pathology of hæmoptysis remain to be noticed:—1. Its dependance upon tubercle of the lungs. 2. Its connection with diseased states of the heart.

In a very large proportion of cases, hæmoptysis is merely symptomatic of tubercular disorganization of the lungs. This subject was formerly noticed when treating of consumption (page 254), but I have hitherto delayed mention of it, because it was desirable that the student should view pulmonary hæmorrhage somewhat abstractedly in the first instance, and afterwards as forming one in that series of symptoms which constitutes phthisis pulmonalis. The connection of parenchymatous hæmoptysis (or pulmonary apoplexy), with disease of the heart, has been often noticed. A contracted state of the mitral valve and hypertrophy of the right ventricle are the conditions of cardiac disease which especially occasion it.

Prognosis.—Idiopathic hæmoptysis (independent of tubercle), though so formidable in appearance, is not a disease of danger. Dr. Heberden, in the course of a long life, saw only one instance of death occurring from the excessive loss of blood. Such cases, however, do sometimes happen. The same author remarks, that hæmoptysis occurring in the advanced periods of life is analogous in some degree to the piles, and may often continue for many years, without producing any bad effects. He notices the case of an old man of 70, who had spit blood for fifty years. Hæmoptysis connected with tubercle is, in like manner, rarely fatal *per se*, but the prognosis here merges in that of consumption. Hæmoptysis dependent on disease of the heart is a most alarming occurrence, and frequently proves the harbinger and even direct cause of death.

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* Lord Byron mentions (Notes to Canto IV of Don Juan) that the Doge Francis Foscari, on his deposition in 1457, hearing the bells of St. Mark announce the election of his successor, died suddenly of hæmoptysis.

Treatment.—As the prognosis in hæmoptysis is intimately connected with that of consumption, so also is the prevention and treatment of the disease. All that I shall now attempt, therefore, is to point out, in a few words, the method of treatment which is to be recommended with the view of checking the *immediate* effusion of blood.

While the blood is actually flowing, little can be done further than to admit cool air, and to avoid every kind of exertion. The patient is even to be interdicted from speaking for a considerable time. Ice, or ice-cold acidulated drinks, may be freely administered, and the diluted sulphuric acid given, in the dose of thirty or forty drops, every six hours. In some few cases, it becomes necessary to open a vein in the arm while the patient is expectorating blood. This, however, may generally be deferred for a few hours, when feverish symptoms supervene. The pulse then becomes full and hard, the skin hot, and there is a sense of general oppression about the chest. The blood will probably be found buffy. A saline purgative is then to be given, and cold acidulated drinks continued. The necessity of a second bleeding will be judged of by the state of the pulse, the habit of body, and the appearance of the blood first drawn; but, unless the symptoms are urgent, it will commonly be advisable to trust, from this period, to the acidulated infusion of roses and the tincture of digitalis. Some practitioners have great confidence in small doses of emetic tartar (one-fourth of a grain) frequently repeated, as a styptic of internal hæmorrhage. A light vegetable diet should be directed.

When the patient complains of a fixed pain in the chest, or of a sense of weight and fulness in a particular part, twelve or more leeches should be applied to the seat of pain. The efficacy of leeches in unloading the distended internal vessels is often strikingly manifested, and strengthens the supposition, that the morbid action leading to pulmonary hæmorrhage is nearly allied to inflammation. When the smallness of the pulse forbids blood-letting, a blister may be directed. In obstinate cases, after a full trial of the measures now recommended, recourse may be had to the superacetate of lead and opium, as in the following form:—

℞ Plumbi superacetatis, gr. iij.
Pil. sap. cum opio, gr. ij. Misce.
Fiat pilula; mane et nocte repetenda.

Alum, the extract of logwood, kino, and the compound infusion of catechu, are powerful astringents, which merit a trial under the like circumstances.

With a view to relieve the distressing cough, by which the lungs are so much shaken, and the risk of hæmorrhage renewed, it will be proper to direct a linctus of oxymel, or a mild mucilaginous mixture, containing a proportion of the syrup of poppies, which may be taken frequently during the day.

Occasionally, a different mode of treatment should be adopted. When the spitting of blood takes place in warm and relaxing weather, when the pulse is weak, and the ordinary evidences of febrile excitement are wanting, we may reasonably presume that the rupture of the blood-vessel has been owing to relaxation and debility. Under such circumstances of *passive* hæmorrhage of the lungs, leeches and active aperients are carefully to be avoided. The patient is to be directed to take one or two glasses of port wine daily, and every six hours the following draught:—

℞ Decocti cinchonæ, ʒxj.
Elixir vitrioli, ♏xx.
Syrupi, ʒj.
Fiat haustus sextis horis sumendus.

PART II.

CHRONIC DISEASES.

INTRODUCTION.

GENERAL CHARACTER OF CHRONIC DISEASE.

Application of the terms acute and chronic. General character of acute diseases. General character of chronic diseases. Division of symptoms into essential and accidental. Absence of essential symptoms in chronic disease.

THE term chronic disease has been employed by physicians in a double signification, which, though sufficiently intelligible to those who have had opportunities of seeing disease extensively, may, without previous explanation, become the source of some embarrassment to the student. In the perusal of the preceding pages, this may perhaps have been experienced; but it is now more particularly necessary to clear up any such difficulties, as chronic diseases are henceforth to be the sole objects of investigation.

The term *acute*, in medical language, is in strictness applied to such diseases as run a short and defined course:—*chronic*, to such as are lingering, and of uncertain duration: but, in common discourse, acute and chronic are frequently taken in the sense of *febrile* and *apyrexial*, because febrile diseases, for the most part, run through their stages rapidly, while such as are unattended by fever are usually of long duration. The ancients called those diseases acute, which being seated chiefly in, and attended with a rapid ebullition of, the fluids, run their course quickly. On the other hand, they called such diseases chronic, as proceed from a vitiated condition of the solids of the body, or from preternatural grossness of the fluids, on which account they either move very slowly towards concoction, or else never reach it.*

These pathological principles are sufficiently founded to entitle the physician to employ the terms acute and chronic in such a sense; but it is necessary to apprise the student, that they are by no means of universal application. The history which has been given of consumption, of chronic rheumatism, and of chronic peritonitis, will suffice to show, that diseases attended with a certain degree or kind of fever are sometimes tedious in their progress, and irregular in their periods and symptoms. In the present division of the work, it will be seen that the converse of this proposition holds equally true, and that diseases, unattended by fever, are sometimes rapid in their progress, and uniform in their symptoms. Apoplexy, cholera, and hydrophobia, afford the most familiar examples. These must be viewed, however, as *exceptions* to a general rule; or rather as facts supporting the opinion formerly urged (Introduction, page 2), that the nature of the subject renders fruitless any attempt to give a *perfect* idea of diseases by considering them separately and piecemeal—that is to say, as exclusively general or local, external or internal, acute or chronic.

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* See Baglivi de Praxi Medica, lib. ii. cap. 1.

Character of acute diseases.—The general character of chronic diseases may be viewed as the reverse of that which distinguishes diseases of an acute kind. Throughout the latter a considerable similarity of pathology will have been observed to prevail. There is a remarkable uniformity also in their symptoms and periods. They run their course in a short time—often in a defined time. In all of them may be traced a disposition to terminate in the recovery of health. Medicine exerts over the greater number of them a very obvious power; and the principles of their treatment may, in most instances, be considered as tolerably well ascertained.

Character of chronic diseases.—They are very tedious. Some of them may even be present in one shape or another during the whole course of life. They are extremely irregular in their progress, assuming a variety of forms, which embarrass equally the practitioner who treats them, and the author who describes them. Though not commonly, or necessarily, accompanied by fever, yet feverish symptoms may arise in all of them, at any period of their course. Much obscurity pervades their pathology. Their origin is almost entirely unknown. The principles of their treatment are neither uniform nor well understood; but were they even better ascertained, it is doubtful how far the physician could avail himself of such knowledge. In the cure of chronic diseases, indeed, as Baglivi observes, neither fortune nor art avail him much. It is seldom that he observes in them any disposition to terminate spontaneously in the recovery of health; and they are unquestionably much less under the control of medicines than acute disorders. Many of them are to be looked upon merely as steps in the descending ladder of life.

Although this may be the general character of the class of diseases which form the subject of the present division of the work, it is not on that account to be supposed that they are less worthy than others of attentive examination. The practical physician will find abundant occasion for the exercise of his skill, if not in the cure, at least in the relief of these complaints; and to the pathologist, chronic diseases are an endless subject of curious and interesting investigation. Their history and pathological relations, indeed, involve some of the most abstruse and recondite points in medical literature. To lay open and explain these, as far as the author's knowledge extends, and the state of the science admits, will be a principal object with him in the present volume. Where he fails in throwing light on the difficulties which he may encounter, it will at least afford him satisfaction to have suggested fit subjects for the inquiries of those who may come more qualified for the task.

A difficulty is experienced by the writer on chronic diseases, in the impossibility of drawing a proper line of distinction between a chronic disorder and the symptoms which accompany it. Acute diseases are known by certain groups of symptoms called *essential.* We noticed six essential symptoms of idiopathic fever, and four characteristic of inflammation. Chronic diseases, on the other hand, have in many cases no essential symptoms. The signs by which we judge of their existence are such as point out, not the nature of the disease, but merely its seat. We call them *accidental* symptoms. Now these accidental symptoms of chronic disorder are by some nosologists advanced to the rank of separate diseases. It is thus that headache, palpitation, and syncope, find a conspicuous place in some nosologies. The circumstance is not of any real importance, but some explanation of it appears to be called for even in the briefest sketch of the character of chronic diseases.

CLASS V.

CHRONIC DISEASES OF THE ENCEPHALON.

CHAP. I.

CHARACTER, CAUSES, AND AFFINITIES, OF THE CHRONIC DISEASES OF THE ENCEPHALON.

Of Neurosis, or disturbed Function of the nervous System, independent of Fever. Diseases arranged under this Head. Their chief characters. Coma. Convulsion. Mental Aberration. States of the Brain in these Diseases. Chronic Inflammation. Congestion. Imperfect Supply of Blood. Affection of the Brain and Nerves independent of the circulating System. Pressure. Pathological Affinities of the chronic Diseases of the Encephalon. Their Conversion into each other. General Principles of their Treatment.

There are not, perhaps, in the whole circle of medical science, any diseases offering so many interesting points of research to the speculative physician, as those which derive their character from disturbance of function in the brain and nervous system, independent of the presence of fever. They may be associated together as the diseases of *primary neurosis*, and they constitute a series, which it cannot but be useful to examine in the first instance in a general manner. It will be found that they have a common character, and many points of mutual connexion. To explain these will not only be the means of preventing hereafter much needless repetition, but it will serve to impress upon the student the importance of those pathological relations among diseases, which serve equally to improve and to facilitate practice.

The diseases comprised in this series are, Apoplexy, Palsy, Epilepsy, Mania, Chorea, Tetanus, Hydrophobia, Neuralgia; to which may be added, Syncope, Asphyxia, Hysteria, and Hypochondriasis. Though deriving their character principally from a morbid condition of the nervous system, they are all more or less connected with disturbed function in other parts. The four last mentioned, however, are so intimately connected with disorder in other organs, that in the present chapter I shall merely keep them before me, with a view to some points in their general pathology, reserving their separate consideration for future parts of the volume.

CHARACTERS OF THE NEUROSES.

Physiology teaches, that among the several functions of the brain and nerves, of which some are well, and others only imperfectly ascertained, the principal are, sensation, voluntary motion, and the manifestation of mind. It is natural to expect, that from disturbance in them the chief characters of the *neuroses* should be derived; and accordingly we find that Coma, Convulsion, and Mental Aberration, are the three great classes to which we may refer the symptoms of these diseases.

1. *Coma.*—Coma consists in the loss of sensation, thought, and *voluntary* motion. The organs of involuntary motion preserve their functions, and it is therefore by the continuance of the pulse and of the breathing, that we distinguish between coma, and the states of syncope and asphyxia. But though in this manner we mark the diagnosis between coma and the *disordered* conditions of the body with which it may be confounded, there are two states, consistent with health, from which it cannot be distinguished by such a criterion;—the states of *sleep*, and of *intoxication*. In all cases of suspected coma, it is necessary, for the safety of the patient and the credit of the practitioner, that this point should receive attention. If duly kept in view, there is no great probability of any mistake occurring. Inattention to the circumstance, and not any difficulty of deciding upon it, when once suggested, has been the occasion of error. Coma is distinguished from sleep by the impossibility of rousing the patient by shaking, noise, or otherwise. The smell of the breath will, for the most part, be sufficient to characterize the state of intoxication; but in extreme cases there will always be difficulty, for actual coma may possibly have supervened. Attention to the circumstances which *preceded* the attack will give to the physician such an insight into the causes of the disease and the habits of the patient, as will assist materially in directing his practice.

The abolition of sense and voluntary motion then, constitute perfect coma; and it is the distinguishing feature of apoplexy, the first disease which will be noticed in the present series. It remains to state, that the loss of these functions is not always complete. Partial deprivations, both of sensation, thought, and voluntary motion, occur in the chronic diseases of the brain, and afford many of the most prominent symptoms of such disorders. Of this kind are preternatural drowsiness, or lethargy, paralysis of particular muscles, indistinctness of vision, amaurosis. They are all referrible, however, to the general head of coma.

2. *Convulsion.*—The second set of symptoms occurring in the chronic diseases of the encephalon, may be classed together under the head of convulsion, or spasm. The state of convulsion is commonly defined to be that, wherein the *voluntary* muscles of the body are excited into action by powers independent of the will. It is not, however, peculiar to those muscles. Not unfrequently those of involuntary motion are similarly affected, the diaphragm for instance, and smaller muscles of inspiration, as in asthma; or the muscular coat of the stomach or intestines, as observed in colic. It would appear, indeed, as if no muscular fibres were exempt from spasmodic contraction, excepting those of the heart. Spasm of the heart may possibly be one of the modes of death.

Of the voluntary muscles of the body it has been remarked, that those which are most immediately under the influence of the will, and most frequently employed, are those principally affected in convulsive disorders; and the same observation will be found applicable to paralytic affections. Of this kind are the muscles of the eyes, eyelids, face, arms, and legs. Spasms of these muscles are observed in chorea, hysteria, and all the lighter forms of nervous affection; while spasms of the muscles of the neck, back, and belly, occur in tetanus, hydrophobia, epilepsy, and indicate a severer kind, or more aggravated *degree* of disease.

Convulsions have been divided into two kinds—the permanent, and that which alternates with relaxation; in other words, the *tonic* and *clonic*. Tetanus affords an instance of the one, hysteria of the other. The distinction is of little consequence, unless coupled with the pathological principle, that the *tonic* or *tetanic* spasm is a disease of infinitely more importance than the *common* or clonic spasm. The former arises from causes over which we have little or no control, and is, at all times, a state of the utmost danger; while the latter (to which the term *convulsion* is more especially supposed to apply) is frequently little more than the evidence of a peculiarly irritable disposition in the nervous system, which may exist, even to a great extent and for a long time, without exciting any uneasiness for the ultimate safety of the patient. In all reasonings indeed concerning a disease accompanied with clonic or common spasm, it is necessary to look to the original constitution and temperament of the individual. There exists in some persons an *irritable* habit of body, a disposition in the system to be excited on slight occasions, and consequently, a more than ordinary tendency to *spasm*. This manifests itself even when any function of the body becomes, from *accidental* circumstances, disturbed. Such a habit of body has been denominated by some physiologists *the nervous temperament.* It is characteristic of the infantile period of life and of the female sex. The distinction between this *irritable habit of body* and the *morbid state of convulsion*, though sufficiently apparent in common cases, is yet on many occasions a matter of considerable difficulty. In point of fact, they will be found to run into each other by insensible degrees, constituting, as we shall afterwards show, one of the many interesting features in the pathology of epilepsy.

Independent of those convulsive actions of the whole body to which the term *fits* is popularly applied, there are a variety of *partial* convulsions, referrible to this general head, which occur as evidences of chronic disease within the brain. Of this kind are, permanent contraction of the iris, irregular contractions of the muscles of the eye, constituting *squinting*, and the convulsions of the pterygoid muscles, commonly called *grinding of the teeth.*

3. *Mental aberration.*—The symptoms by which chronic disease of the brain manifests itself, may be referred, in the third place, to the head of *Vesania*, or mental aberration. Of this disordered condition of the brain physicians have noticed many varieties. It may be either temporary or permanent; in other words, it may assume the form of delirium or mania. It may be either general or partial; that is to say, the powers of thought may be completely lost, as in the case of *idiotcy;* or some one faculty of the mind may be disturbed, while others

remain perfect, or only partially impaired. Sometimes, for instance, the imagination labours under a strong and unconquerable delusion, while the memory is perhaps still enjoyed in full perfection. This constitutes the highest grade of mental aberration, and is the characteristic feature of *mania*. At other times the memory fails, while the powers of perception are still uninjured. This is a frequent consequence of severe injuries of the head, and of paralytic seizures. It is a very common attendant also on that morbid change in the structure of the brain, which gradually takes place in the latter periods of advanced life.

Aberrations of mind, lastly, vary in their character and intensity. Sometimes they are attended with fierce excitement, violent aversion, and a disposition to commit acts of violence on themselves or those around them. At other times the delusion of mind is accompanied with a sense, hardly less formidable, of melancholy and settled despondency. To the lighter shades of this disordered condition of the mind, physicians have commonly applied the term *hypochondriacism*. Occasionally, we find maniacal aberration coupled with a perfect tranquillity and self-content.

PATHOLOGY OF THE NEUROSES.

I proceed to inquire into the opinions generally entertained regarding the pathology and proximate cause of the diseases commonly called nervous. And here it is to be remarked, in the first place, how manifestly a large proportion of such cases are connected with, and therefore probably dependent upon, certain disordered states of the *circulating* system. That this principle is not of universal application, I shall presently have occasion to show; but, in the mean time, it will be right to point out what those derangements of the circulating system are, which are so closely interwoven in the pathology of nervous diseases.

1. *Chronic inflammation of the substance of the brain, or of its meninges.*—That this is the true *proximate cause* of many cases of chronic disease of the encephalon, is abundantly proved by the appearances found on dissection; which are, depositions of coagulable lymph upon the surface of the brain, thickening of one or more of the membranes, and suppuration. These *unquestionable* marks of inflammatory action are, however,

but rarely met with, in comparison with two others, frequently adduced as evidences of the same state of disease;—namely, increased vascularity within the cranium, and serous effusion between the membranes, or within the ventricles. These appearances are very common in different diseases, but in none are they so generally met with, as in chronic affections of the nervous system. There are few instances, indeed, of any morbid change of structure in the brain existing without them. Pathologists have differed in their estimate of the importance to be attached to them, especially to that of effusion. The general opinion appears to be, that though serous effusion from the cerebral vessels cannot be assumed as proof of the existence of actual inflammation within the brain, it denotes a degree of morbid *excitement* of the vessels of the brain, not far removed from inflammatory action.

2. *Congestion of blood in the blood-vessels.*—This may arise either from an extraordinary flow of blood into the arteries of the brain, or from the difficulty experienced in the return of blood to the heart. The peculiar structure of the large venous trunks of the brain is calculated to lead, under certain circumstances, to *stagnation*, or, as it is now more commonly called, *venous congestion* in the head. That such a state of the circulating system in the encephalon does occasionally exist, there cannot, I presume, be a doubt; but it may be fairly questioned how far we are able to judge of its existence, with any degree of accuracy, by examination made after death. It is at least sufficiently ascertained, that that fulness in the vessels of the brain, so often found upon dissection, and supposed to denote *congestion*, depends in a great degree on the position in which the body had lain previous to examination.

3. *Hæmorrhagy.*—The rupture of a blood-vessel within the brain acknowledges many of the laws which affect other hæmorrhagies; but the want of outlet for the effused fluid, the peculiar delicacy of the structure of the brain, the importance of its functions, and, above all, the remarkable effects of pressure upon its substance, give to the *hæmorrhagia cerebri* an interest far superior to what belongs to any other form of hæmorrhagic disease. The symptoms produced by effusion of blood within the brain, are, with few exceptions, those of apoplexy. The nature and varieties of cerebral hæmorrhagy will accordingly constitute the most important feature in the pathology of that disease.

4. *Imperfect supply of blood.*—The brain, like every other organ of the body, is dependent for the due exercise of its functions on the circulation. It can neither perform them properly when the supply of blood is too great, nor when it is defective. Syncope is the usual result of a want of due supply of blood to the brain; but convulsions occasionally arise from the same cause, as is well exemplified in the instance of puerperal hæmorrhage. Deficiency in the supply of blood to the brain is certainly not a cause of organic, and hardly even of what can be called *chronic* disease of the brain, but as a principle in the pathology of nervous affection, capable of explaining many of the phenomena of disease, it ought never to be overlooked.

5. In like manner, it becomes necessary to notice a fifth state of the circulating system which is occasionally present in nervous diseases;—I mean the supply of blood *imperfectly oxygenated*, and therefore unfit for supporting the functions of the nervous system. This principle, it is true, like the last, is very limited in its application; but it enters into the pathology of apoplexy, and of all the severe forms of thoracic disease, pulmonary, and cardiac; and it is the foundation of many of our reasonings concerning asphyxia.

I have already remarked, that there are conditions of cerebral disease, independent, as far as we can judge, of the circulating system.

1. The first of these is simple compression of the cerebral substance. This may arise either from a coagulum of blood, a soft tumour, a bony excrescence, a depressed portion of the skull, or the presence of some foreign body. The effects of pressure vary extremely, according as it takes place *suddenly* or gradually. In most instances, the symptoms occasioned by pressure on the brain partake of the *comatose*, or apoplectic character; but instances are upon record, particularly in the case of gradual pressure, where such a state has been followed by symptoms, not of insensibility, but of high nervous excitement—by mania and convulsions. There is some difficulty in distinguishing between the states of compression and venous congestion. In many cases, however, there can be little doubt that these two conditions are coexistent.

2. There still remains to be stated one principle of very general application in the pathology of nervous disorders. Hitherto we have had some cognizable cause for the symp-

toms—the effusion of blood, inflammation, or the pressure of a tumour. But it is further to be observed, that affection of the brain and nerves may exist independent both of pressure, and of all disturbance in the circulation within the encephalon. The best illustration of this principle is afforded by the phenomena of the narcotic poisons, where coma and convulsion are produced by means, which obviously act on the sentient extremities of the *nerves*, and which, we may fairly presume, deprive the nervous substance of its *mobility*, or its power of receiving or communicating impressions. Such a pathological principle is necessarily obscure, from the very nature of the functions concerned, but it will be found an indispensable one on many occasions; as, for instance, in any attempt at explaining the pathology of tetanus and hydrophobia, or in elucidating those varieties of epilepsy and chorea which depend upon the sympathy of the brain with some distant organ. The principle being once established, there remains no longer any difficulty in understanding why, in a great variety of cases of chronic disease of the brain, no morbid appearances of any kind are found upon dissection. This interesting fact, indeed, has been denied by some, and explained away by others; but it is too frequent and too obvious to be thus disposed of. The student in medicine may here receive an important lesson. He may learn from this, that the causes of *death* are often as obscure as the sources of life and health; and that morbid anatomy, with all its acknowledged advantages, may, if pursued too exclusively, injure rather than promote the legitimate speculations of the pathologist.

Diagnosis.—The observations now offered on the character and general pathology of nervous diseases, will tend to point out the very intimate connection subsisting among them. This principle will receive further illustration by a view of their predisposing and exciting causes, by a consideration of their mutual conversion, and, lastly, by a survey of the principles of treatment applicable to the greater number of them. But before adverting to these topics, I would wish (without, however, going into any detail on the subject) to notice the attempts which have been made to connect particular symptoms observed during life with certain appearances found after death;—in other words, to establish *minute diagnosis* among the morbid affections of the several structures contained in the encephalon.

Pathologists, more especially those of recent times, have been at pains to distinguish inflammation of the arachnoid, from a similar affection of the other membranes;—extravasation into the ventricles, from extravasation with laceration of the substance of the brain;—disease of the anterior, from disease of the posterior lobes of the brain;—injury of the brain, from injury of the medulla oblongata. It would be presumptuous to say, that attempts of this kind are nugatory; but hitherto very little success has attended them. The rules laid down by authors are subject to such numerous exceptions as to interfere greatly with their application in practice, and certainly no reasonable hope exists of deriving from them, even if considerably improved, any portion of practical advantage.

Pathological affinities of the neuroses.—It is of more importance to trace the *analogies* among the chronic diseases of the encephalon than their minute shades of difference; and we shall be assisted in this, in the first place, by considering the similarity, and even, in many cases, the identity of their predisposing and exciting causes. Mania, for instance, and epilepsy, are hereditary. The exciting causes of epilepsy are for the most part those also of apoplexy and palsy. Chorea, hysteria, and many varieties of epilepsy, have a common origin in a disordered state of the stomach and bowels. But in no way is the connection among these diseases so strikingly displayed as in the circumstance of their mutual conversion, and in their manner of running into each other by insensible degrees. I have already alluded to this in the case of hysteria and epilepsy; but it is equally well marked with regard to palsy and apoplexy, syncope and convulsion, convulsion and mania, mania and apoplexy. One individual of a family has had epilepsy, while others have been deranged. Epileptics commonly die with comatose symptoms. Neuralgic affections are not unfrequently succeeded by amaurosis, or by apoplexy.

Treatment.—It remains only, that I notice the principles of treatment applicable to the greater number of the diseases which are now under consideration; and it will be found, that the pathological analogies subsisting among them are strikingly confirmed by the effects of the *juvantia* and *lædentia*. The depleting and lowering system adapted to the particular circumstances of each patient, and the peculiarities of each disease, is upon which the physician places his chief reliance; and it is, with some few exceptions, of powerful efficacy in all of them, whether exhibiting the character of coma, of convulsion, or of mental aberration. This is the great principle kept in view, whether we employ bleeding, purging, leeches, cupping, local cold, blisters, issues, and setons; or content ourselves with remedial means of a less formal though not less useful character, such as a cooling spare diet, regular exercise, or a course of aperient mineral waters. By these means, early, steadily, and judiciously applied, we may often do a great deal towards the relief, or permanent cure, of the chronic diseases of the brain; while without them, and depending upon stimulants and antispasmodics, our expectations will be but too often disappointed.

CHAP. II.

APOPLEXY.

Premonitory Symptoms. Varieties in the Apoplectic Seizure. Appearances presented during the Apoplectic Fit. Prognosis. Appearances on Dissection. Predisposition to Apoplexy. Exciting causes. Speculations concerning its proximate Cause. Subdivision of Apoplexies. Treatment during the Fit. Prophylaxis. Coup de Soleil. Its origin, progress, and proximate cause.

In the last chapter, I had occasion to explain the sense in which physicians employ the term coma; and I then stated, that apoplexy is a disease of which coma constitutes the leading feature. Coma, or the abolition of the functions of the brain and nerves, may be the consequence of external injuries, or it may occur without any obvious assignable cause. In the former case, it is an object of attention to the surgeon, and is often remediable by surgical operation. In the latter case it falls under the cognizance of the physician, and is by him denominated spontaneous coma, or apoplexy.

Warnings.—It is very seldom that this dreadful visitation is experienced without the occurrence of symptoms to warn the patient of its probable approach. There are few instances, indeed, of any kind of severe disease occurring without some premonitory symptoms. In the case of apoplexy, they are sometimes of a very obscure and ill-defined kind, such as indigestion, palpitation, weakness, general oppression, and an inward sense of impending danger. In other cases, the evidences of an apoplectic tendency are much less equivocal. With a view to practice, such symptoms are of infinitely more importance than those of the fit itself; and they accordingly require the most serious attention from the physician. For the sake of perspicuity, they may be arranged according as they affect the head generally, the external senses, the internal senses, or the organs of voluntary motion.

To the first class belong pain of the head (generally a dull pain, with a sense of weight, but occasionally a more acute pain, accompanied with the feeling of the head being bound round by a cord or wire);—giddiness, particularly on stooping, or any attempt to turn the head quickly round;—throbbing of the temporal arteries. To the second class belong transient deafness, ringing in the ears, epistaxis, obscurity or irregularity of vision, transient blindness.—To the third, stupor, drowsiness, incoherent talking, a state resembling intoxication, disturbed sleep, failure of the memory, loss of temper.—To the fourth, twisting of the mouth, falling of the eyelid, numbness and weakness of a finger, dragging of the leg, stammering. After experiencing, for a longer or shorter time, one or more of these warnings, the patient falls into the apoplectic fit; and Dr. Abercrombie has well described the several ways in which this takes place.*

Modes of apoplectic seizure.—1. In the most usual form of apoplectic seizure, the patient falls down *suddenly*, deprived of sense and motion, and lies like a person in a deep sleep. He neither hears nor sees, nor feels. Unconscious of every thing around him, he is alike insensible to the exertions of his medical attendants, and the anxieties of his friends. The suddenness of the attack is that feature of the disorder which most immediately impresses itself upon the notice of observers; and being so very general, the disease has from this circumstance in all ages received its name.

2. The second form of apoplectic seizure commences by a sudden attack of violent pain of the head, accompanied with paleness of the face, sickness at stomach, vomiting, and transient loss of recollection. The patient, in some instances, falls

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* Edinburgh Medical and Surgical Journal, vol. xiv. p. 554.

down in a state resembling syncope, but recovers in a few minutes, and is able to walk. After a few hours, however, the headache continuing, he becomes oppressed, and *gradually* sinks into perfect coma.

3. The third form of apoplectic seizure begins with a sudden attack of *palsy* of one side, with loss of speech, which after the lapse of some hours passes gradually into apoplexy.

Phenomena of the apoplectic fit.—In whichever way the apoplectic fit commences, there are certain appearances presented during its continuance, which merit attention. The pulse, at first, is commonly small and irregular; but as the system recovers from the shock, the pulse becomes full and strong, and is generally slower than natural. Respiration is much embarrassed, being always slow, and occasionally irregular. In all the severer degrees of the disease, this laborious breathing is accompanied by *stertor;* and a frequent appearance is that of foam, or frothy saliva, excreted from the mouth, and blown away from the lips with considerable force. This latter symptom has always been looked upon as indicative of the greatest danger.

The skin is commonly warm, and bathed in a copious perspiration. In the worst cases of the disease, a cold clammy sweat has been observed. The face is generally pale; the cornea dull and glassy; and the pupils permanently dilated. The teeth are closely clenched; and the power of swallowing, though seldom wholly lost, is for the most part so much impeded, as to oppose the most serious obstacles to the administration of remedies. The bowels are torpid, as is usual in all cases of cerebral oppression, and they resist the action even of powerful cathartics. If blood be drawn from the arm, the coagulum is commonly firm; and Sir Gilbert Blane states that it is in most instances buffy.

The duration of the apoplectic fit varies from two or three hours to as many days. Thirty hours may be called the average duration of those cases which have fallen under my own observation. Instances, indeed, are on record of *sudden death* from apoplexy; but in many of these there are grounds to suspect, that the immediate cause of dissolution was to be found in some affection of the heart, or large vessels in its neighbourhood, rather than in injury to the brain. Genuine apoplexy, commencing in the manner I have described, and attended with all the symptoms just enumerated, almost always ends fatally. When a recovery, either perfect, temporary, or partial, takes place, it will usually be found that some of the more decided evidences of perfect coma have been wanting; the patient has given evidence of feeling when his limb is grasped, or the lancet used; the pupil has obeyed in a certain degree the stimulus of light; the mouth has not been firmly closed, nor the power of swallowing wholly lost; there has been no stertor, or foaming at the mouth; nor were the premonitory symptoms strongly marked. Under such circumstances, our prognosis may be somewhat more favourable; though it should even then be guarded by the reflection, that if recovery does take place, it is seldom complete. An incurable palsy may remain; or the memory may fail, either wholly or partially; or an imbecility of mind, approaching to mania, may be left. But besides this, in every case where a decided apoplectic fit has been experienced, a relapse is to be dreaded; and recovery from a second attack, though sometimes witnessed, is yet a rare event.

Morbid anatomy.—The opportunities which the fatality of this disease has afforded to the physician for prosecuting his researches into its nature and seat, have not been lost; and we have accordingly a most extended record of the appearances found on dissection in apoplectic cases. Their variety is very great, and must be fully appreciated before any attempt can be made to explain the pathology of the disease. Extravasation of blood in some part of the encephalon, is by far the most common appearance, and is that which is generally to be anticipated. Such extravasation may take place between the membranes of the brain, on its surface, about its basis, within its ventricles, or in the midst of its substance. The quantity of fluid effused is as various as its situation; and the violence of the symptoms is found to bear reference, partly to the *quantity*, and partly to the particular *seat* of extravasation. An extensive effusion of blood is equally to be dreaded wherever it takes place; but a slight effusion is generally stated, and probably with justice, to be more dangerous in certain situations than in others. It is believed, for instance, to be much more alarming, and attended with more formidable symptoms, when occurring in the medulla oblongata, than in the anterior lobes of the brain.

The next most usual appearance in those who die of apoplexy, is the effusion of serum, either upon the surface of the brain, or within the ventricles. In some cases we meet with turgescence of the smaller vessels, or of the great sinuses of the brain, but without effusion either of blood or serum.

These are the common appearances presented on examination of those who die of apoplexy; and, considering their frequency, it is undoubtedly a surprising circumstance, that occasionally, after the most unequivocal symptoms, the head presents, on dissection, nothing morbid or uncommon. Some pathologists explain this by supposing, that effusion or disorganization may have taken place, but in a degree so minute as to escape observation. Others imagine, that more decided appearances may have existed, but were overlooked in the hurry of examination. A third class maintain, that there may be morbid phenomena present during life, which disappear prior to dissection; while others avow their persuasion, that in some other part of the body (the thorax, for instance, or spinal marrow), the cause of death existed, and might, by judicious examination, have been detected. These arguments may have weight in particular cases, but their *general* tendency is disproved by an extended survey of the chronic derangements of the brain and nervous system.

Predisposition.—The predisposition to apoplexy has attracted much attention from medical authors, and many contradictory opinions have been brought forward concerning it.

1. The tendency to apoplexy is given, in the first place, by certain *conformations of body.* The apoplectic *make* has been remarked, indeed, in all ages. A large head, a short thick neck, a florid complexion, broad shoulders, short stature, with a tendency to corpulency, are the prominent features of the apoplectic figure. Nevertheless, apoplexy is sometimes met with in spare subjects with pale countenance. Peculiarity in the formation of body being often hereditary, a tendency to the disease may naturally be expected to prevail in particular families; but independent of this, there may exist a *constitutional* tendency to disease of the head, the knowledge of which will materially assist in forming a right judgment on the origin and probable tendency of particular symptoms.

2. The predisposition to apoplexy is connected, in the second place, with a certain *period of life.* Hippocrates said, that apoplexies were chiefly generated between the fortieth and sixtieth year; and Cullen further remarks, that as life

advances, the tendency to this disease increases. There is no doubt that in early life it is rarely met with; but it is far from being uncommon between the twentieth and thirtieth year. By many pathologists it has been held, that the greater liability to the disease at an advanced period of life, is owing to that ossified or otherwise diseased state of the coats of the cerebral arteries, which is stated to be then of frequent occurrence. It is supposed to give increased facility to extravasation within the encephalon, as in other parts it leads to aneurism. There is, probably, some foundation for this opinion, though it may have been pushed too far by certain of its supporters. While we are ready to acknowledge, then, that the rupture of a blood-vessel within the brain may sometimes be connected with a diseased state of the coats of the arteries, we must not, on the other hand, forget, that, in probably a *larger* proportion of cases, it is merely the result of a *morbid action* of vessels, analogous to that which takes place in hæmoptysis.

3. A predisposition to apoplexy is further given by such *habits of life* as tend to produce plethora generally, to drive the blood in more than ordinary quantity upon the vessels of the brain, or to prevent its free return to the heart. Hence it is, that full living, habitual intoxication, sedentary pursuits, too great indulgence in sleep, intense and long-continued thought, have always been accused of leading to apoplexy.

Exciting causes.—The principal of these are, the distension of the stomach by a full meal, the immoderate use of wine or spirits, straining to evacuate a costive stool, violent exercise, very long or loud speaking, severe fits of coughing, tumours on the neck, stooping, the recumbent posture, and, lastly, violent passions of the mind. It is a singular circumstance, that both heat and cold, when in an extreme degree, may occasion apoplexy. The improper use of the warm bath has, under my own observation, brought on complete and fatal apoplexy. On the other hand, excessive cold produces a torpor and sleepiness, apparently of the comatose kind. This was strikingly exemplified in the celebrated adventure of Dr. Solander and Sir Joseph Banks on the mountains near the Straits of Magellan. The disposition to sleep is almost irresistible; but, in the emphatic language of Dr. Solander, whoever indulges it, " wakes no more."

It belongs to this place to remark, that an apoplectic attack is not uncommon in the progress of other diseases. It occasionally occurs in fevers, small-pox, rheumatism, gout, and hooping-cough; and it is a still more frequent consequence of organic diseases of the heart, more particularly of the hypertrophied heart, characterized by its bounding pulse, and tumultuous action within the chest. Hence it is that apoplexy is so often associated with dropsy.

I am unwilling to place in the catalogue of the exciting causes of apoplexy certain others which have been mentioned by authors; because the very circumstance of naming them as such, involves the difficult question of the nature of the affection which they produce. To this class belong opium, tobacco, and the other narcotics; the carbonic acid, and other irrespirable gases; certain poisonous vegetable matters (as the upas antiar, and woorara); and lastly, lightning. The consideration of their effects and of their mode of action will be reserved for discussion in the chapter on asphyxia.

Essential character of apoplexy.—In the remarks now offered, I have attempted, as much as possible, to confine myself to facts, and to avoid all allusion to the variety of opinions which have been entertained respecting the proximate cause of apoplexy, and consequently respecting the division of the disease into different species. These topics, however, must be acknowledged to be of no small importance; and it will be my endeavour to lay before the student such a view of them, as may assist him in unravelling the difficulties in which this portion of medical science is involved.*

It has been the great object of pathological writers to discover some one morbid condition of the brain which is present in every case of apoplexy. Some have stated this to be *effusion*. Others have generalized further, and considered *pressure* as the real efficient cause of the apoplectic phenomena. A third class of pathologists have held that irregular or *interrupted circulation* through the brain is the general principle explanatory of all cases of apoplexy.

Each of these opinions has been supported by ingenious arguments; and that in particular which attributes the disease to *pressure* on the cerebral mass or its appendages, is undoubtedly applicable to a very large proportion of cases. The proof of its applicability as a proximate cause *in all cases* is, however, defective. Extravasation of blood is the most usual source of that pressure which occasions apoplexy; yet extravasated blood has been on several occasions found in the brain, without any comatose symptoms having existed during life. The same thing is even still better ascertained with regard to serous effusion and sanguine congestion, which are presumed to be the next most usual sources of pressure in apoplectic attacks. These facts, taken in connection with those which substantiate the frequent occurrence of apoplexy without leaving any cognizable traces of disease after death, appear to warrant the opinion, that the *single* principle so long sought for by pathologists does not exist; and that, in point of fact, the apoplectic state is the result of different morbid conditions of the system.

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* The student who desires further information on this subject, or on that of apoplexy generally, may consult with the greatest advantage the first volume of Dr. Cooke's "Treatise on Nervous Diseases," where, besides much useful original matter, he will find references to all the best authorities.

Division of apoplexies.—These speculative notions concerning the proximate cause of apoplexy have not been confined to the closet of the pathologist. They have given occasion to the subdivision of apoplexies into different species, important, it is said, in practice, as leading to diversities of treatment. By many of the distinguished systematic writers in medicine, great stress was laid on the division of apoplexies into *sanguineous* and *serous*, and the doctrine continues, in a certain degree, to influence the notions and practice of modern physicians. Certain symptoms have been described as peculiar to the serous apoplexy, and plans of treatment have been recommended, adapted only to that species of the disease. These conclusions, however, are neither borne out by facts, nor rendered probable by pathological reasoning. The distinctive characters described by authors are seldom met with in actual practice. Even where they have been the most distinctly marked, the appearances on dissection have frequently disappointed the expectations of the practitioner. Pathological reasoning would incline us still further to distrust such distinctions, as it would tend to show, that the effusion of blood and that of serum depend here, as in many other cases, upon the same general cause. As far, then, as they simply express a fact discovered after death, the terms *serous* and *sanguineous* may be admitted; but they can never with propriety be employed during life, under the impression of establishing more accurate diagnosis, or of facilitating practice. If these objections apply to the old division of apoplexies into sanguineous and serous, there are others of a like kind, not less forcible, which may be urged against the distinctions of *meningeal* and *cerebral*, or of simple apoplexy, and of apoplexy complicated with paralysis.

The doctrines here laid down are now to be applied to an illustration of the principles and details of treatment proper in apoplectic cases. From the remarks just offered on the distinctions of apoplexies, we may deduce the very important rule that, in regulating the treatment, the practitioner is not to embarrass himself by any considerations derived from morbid anatomy. The same general principles will direct him, whether blood or serum may ultimately be found effused; and though the details must necessarily be varied, according to the age and constitution of the patient, the severity of the disease, or other accidental circumstances, there is no class of apoplectic affections which requires a system of management distinct from others.

Treatment during the fit.—In the actual paroxysm of apoplexy, the patient should be moved into a spacious apartment, and cool air freely admitted around him. His head should be raised; ligatures of all kinds, especially about the neck, should be loosened; and the legs and feet may with propriety be placed in warm water. A strong disease, however, as Aretæus observed, requires a powerful remedy, and blood-letting has at all times been resorted to as holding out the best prospect. Many objections have been urged against it; but it still continues, and must for ever continue to be employed. In the most aggravated form of the disease, indeed, neither bleeding nor any other remedial means can reasonably be expected to effect a cure; but there are no grounds for believing, that, with common caution, the danger of the patient is *increased* by it. No one certainly would venture to advise repeated and indiscriminate abstraction of blood, without reference to its effects, to the character of the pulse, the condition of the heart, the state of the circulation within the head, or to any of those rules by which we regulate the application of the lancet in other cases. This would be a blameable empiricism; but at the same time the student should feel, that blood-letting is the only effectual remedy in apoplexy, and he should not be discouraged from it by any theoretical notions. The observations of Dr. Fothergill, and others who have opposed the employment of blood-letting, tend rather to establish the dangerous nature of the disease, than the impropriety of the practice. We cannot, it is true, remove by this means blood which has been actually extravasated; but we may prevent further effusion, and lessen general compression. In slighter cases, we may relieve the excitement and tension of the vessels within the head, and possibly prevent effusion altogether.

On the first attack, therefore, blood should be drawn from the arm to the extent of one or two pounds; and this should be repeated in four or five hours afterwards, if the comatose symptoms continue, with strong action of the carotid and temporal arteries, heat of the scalp, and activity of the pulse. It ought to be known, that from six to eight pounds of blood have been taken from a person, by no means robust, before the disease began to yield. On the other hand (as Dr. Latham has well observed, in commenting on the propriety of blood-letting in cases of sudden seizure*), attention must always be paid to the *constitution* of the patient; and it must be borne in mind, that a practice highly proper in persons of corpulent habit, firm muscles, and florid complexion, would be detrimental in emaciated subjects, with flaccid muscles, and those unequivocal evidences of languid circulation,—cold extremities, and a small thready pulse. The practitioner will also ascertain, as far as practicable, the state of the heart. In apoplexy supervening on the hypertrophied heart, the local abstraction of blood, by cupping, from the nape of the neck, is preferable to venesection.

The advantages of opening the temporal artery or jugular vein, in preference to bleeding from the arm, have often been insisted on, but apparently without sufficient reason. It is enough that the evacuation be made in a full stream, and carried to such an extent as to affect the system. Cupping from the nape of the neck is a powerful means of relieving tension within the cranium, which may be resorted to in apoplectic cases with great prospect of advantage. In elderly persons, and feeble constitutions, it may even supply the place of general blood-letting.

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* Transactions of the London College of Physicians, vol. vi. p. 248.

Every exertion is to be made to exhibit purgative medicines; but the clenching of the teeth and the paralytic state of the organs of deglutition often render this a matter of extreme difficulty. Croton oil, in the dose of two or three drops, is well deserving of a trial. Some calomel may be laid upon the tongue, and a strong infusion of senna with tincture of jalap given by teaspoonfuls, until a full effect has been procured. The operation of these medicines may be promoted by purgative glysters.

Blisters are inapplicable to the early stages of a disease so urgent as apoplexy; but after the trial of other measures, and during the period of convalescence, they may be had recourse to, with some prospect of advantage. They may be applied either to the nape of the neck, between the shoulders, behind the ears, or to the shaved scalp.

These are the chief measures of acknowledged efficacy, which we possess in the treatment of apoplexy. The exhibition of *emetics* has, indeed, been extolled by some as highly useful, and even as superior to blood-letting; but the practice has never been generally followed; and there is no small difficulty in understanding how it could be carried into effect in those severe cases, to which it is considered as particularly applicable. In the instance of an apoplectic seizure immediately succeeding a full meal, an emetic might perhaps be advisable; but even under such circumstances, it would be improper to rely upon it to the exclusion of other remedies.

The attention of the practitioner, however, will not be devoted exclusively to reducing the force of the heart's action. In some instances the apoplectic state is connected, from the very first, with exhaustion, and a small supply of blood throughout the body. Still more frequently, such a condition of the system results from the several measures of depletion previously adopted. Under such circumstances, provided the patient can swallow, the circulation is to be supported by draughts, containing the subcarbonate of ammonia, ether, and the aromatic confection.

Prophylaxis.—Apoplexy being so very fatal a disease, it is incumbent on the physician, in all cases where he has reason to suspect a predisposition to it, to employ steadily such prophylactic measures as are calculated to avert the danger. A cool spare diet, abstinence from all fermented or spirituous liquors, regular exercise, abridging the usual number of hours allotted to sleep, the steady perseverance in a course of purgative medicine, shaving the head, cold washing, and, in some instances, establishing a drain near the head by means of an issue or seton, are those on which his chief reliance ought to be placed. Dr. Cheyne* speaks highly of the powers of antimonial powder in constitutions predisposed to this form of sanguine congestion and effusion.

When giddiness, fulness of the face, hæmorrhagy from the nose, or throbbing of the arteries of the head are present, blood must be taken either from the arm, or from the nape of the neck by cupping, according to the degree in which the general system participates in the disturbance.

COUP DE SOLEIL.

The complaint called coup de soleil is allied in pathology as well as in name to the apoplectic stroke. In its intense and perfect form it is met with only in tropical countries. For the following brief sketch of its origin, progress, and character, drawn from a series of twelve cases, treated at Meerut, I am indebted to Mr. Cotton, assistant-surgeon of the 14th regiment, under whose care they occurred.

The subjects of disease were exclusively men of irregular habits, who, for two or three days preceding the attack, had been indulging freely in spirituous liquors, and prowling about under exposure to an almost vertical sun. The seizure took place usually towards evening. The symptoms were, stupor and insensibility, loss of the power of speech, a burning skin, the pupils at first strongly contracted, and subsequently dilated, the pulse rapid, hard, full, and bounding. In some cases there occurred tetanic convulsions, the body resting on the head and heels, or rolling from side to side. The patients sunk rapidly, and death usually ensued within two or three hours from the period of attack.

The danger of the disease is extreme. Very few recovered, and none in whom stupor was fully developed. On dissection, serous effusion was found in the ventricles of the brain, and even in larger quantity at the base of the brain, and in the theca vertebralis.

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* Dublin Hospital Reports, vol. i. p. 315.

The force of the pulse indicated the propriety of venesection, but the results of the practice were not satisfactory. The temporal artery was opened in some cases, but without advantage. Some men died during the operation. Cold applications to the head were apparently more serviceable.

From the character of the symptoms, and the effects of remedies, there are grounds for believing that the proximate cause of the coup de soleil is *nervous agitation or exhaustion;* understanding by that term the condition of the brain and nervous system which succeeds to violent excitement. Such a state ought not to be confounded with that of *debility*—a term which it would be consistent with strict pathology to appropriate to those cases, where there is great and protracted expenditure of nervous power without preceding excitement.

CHAP. III.

PALSY.

Relation of Palsy to Apoplexy. Distinctions among Paralytic Affections. Cerebral Palsies. Hemiplegia. Appearances on Dissection. Paraplegia. Partial Palsies depending on Disease of the Encephalon. Palsy independent of any Affection of the Brain. Palsy from Cold. From Lead. Treatment of Hemiplegia and of Paraplegia—of Amaurosis—and of saturnine Palsy. Of the shaking Palsy.

Medical authors have almost uniformly agreed in uniting the consideration of apoplexy and palsy; and there can be no question but that these diseases are, in many of their great pathological features, very closely associated. There are points, however, in which they as widely differ; and it will conduce to a clearer understanding of what is known regarding the nature and varieties of palsy, if it is treated as a distinct affection. A vast number of very intricate questions are involved in the consideration of palsy. To all the difficulties connected with the pathology of apoplexy, are added many peculiar to itself.

These it will be my endeavour to point out to the notice of the student; but I shall not consider it incumbent upon me to examine into the merits of the different speculations to which they have given rise.

A superficial survey of the phenomena of palsy would lead to a distinction among the cases of this disease, into such as are connected with a morbid state of the encephalon, and such as, being *to all appearance* independent of any affection of the brain, originate, we may fairly presume, in some condition of the nervous filaments themselves, by which they are rendered incapable of receiving or transmitting impressions. The former, being infinitely the most common, will in the first instance require attention.

The most perfect form of cerebral palsy is *hemiplegia*; in which the affection extends over the whole of one side of the body, from the head to the foot. Sometimes it takes the form of *paraplegia*, or palsy of the lower extremities; and, in some rarer instances, the affection is confined to the loss of function in a particular nerve. Each of these varieties of cerebral palsy will require separate investigation.

HEMIPLEGIA.

Approach of palsy.—Hemiplegia, to which form of the disease the term *palsy* is in common language appropriated, has generally been considered as a minor degree of apoplexy. The attack of it is sometimes unexpected, but more commonly is preceded for several days, or even weeks, by one or more of those symptoms formerly described as the forerunners of apoplexy; such as giddiness, drowsiness, numbness, dimness of sight, failure of the powers of mind, forgetfulness, transient delirium, or indistinctness of articulation. Excessive thirst was observed by me in one case. For the most part, the paralytic seizure is *sudden;* but occasionally, the approaches of the disease are made more slowly;—a finger, a hand, or an arm, the muscles of the tongue, of the mouth, or of the eyelids, being first affected, and the paralytic state gradually extending to distant parts.

It is a common observation, that hemiplegia is preceded by a genuine fit of apoplexy; but this opinion will hardly be borne out by facts; and it is, *à priori*, rendered improbable by a comparison of the frequency of palsy, with the rarity and acknowledged fatality of apoplexy. It is true, that the patient, on occasion of the paralytic *stroke*, is often observed to labour under more or less of temporary coma, but the apoplectic paroxysm is hardly ever complete. It will be found in practice, that palsy is much more commonly the *precursor*, than the *consequence* of apoplexy. In some cases of paralytic stroke, there is intense pain of the head, an active pulse, and other evidences of inflammatory fever and cerebral congestion, continuing for several days.

Symptoms.—It has often been remarked, as a very singular circumstance, that in hemiplegia, as well as in other varieties of palsy, the power of sensation should remain perfect, while that of voluntary motion is wholly lost. This curious fact has perplexed physiologists in all ages, and various theories have been offered in explanation of it. Even in the present improved state of our knowledge, however, regarding the functions of the brain and nerves, these must be considered as hypothetical. Cases, indeed, have undoubtedly occurred, wherein sensation was impaired, as well as the power of voluntary motion; nor are there wanting instances of the total loss of sensation, or of the loss of sensation on one side, with that of motion on the other. These latter cases, however, supposing them to be faithfully related, are so rare as hardly to merit notice. So far from there being *commonly* a loss of feeling attendant on palsy, it is not unusual to observe sensation morbidly increased. A disagreeable feeling of creeping, for instance, is occasionally complained of; rheumatic and nervous pains affect the limb; and blisters and phlegmons occasion the usual degree of inconvenience.

The temperature of the paralytic limb, as far as my own observation extends, is commonly preserved; though to the patient's feelings it may sometimes appear hotter, sometimes colder than natural. On this subject also, a considerable diversity of opinion has prevailed. Mr. Earle* has found reason to believe, that paralytic limbs are of a much lower temperature than natural; that they are incapable of supporting any fixed temperature; that they are peculiarly liable to partake of the heat of surrounding media; and cannot, without injury, sustain a degree of warmth, which to a healthy limb would prove in no degree prejudicial.

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* Medico-Chirurgical Transactions, vol. vii. page 179.

I have commonly observed, that the pulse in the paralytic limb is weaker than that of the sound one. The mouth in hemiplegia is always distorted, and a peculiar expression of countenance is given by the torpor of one side of the face. The saliva, in many cases, dribbles away; and the tongue, when protruded, is turned to one side. The speech is indistinct, and considerable difficulty is often experienced in swallowing liquids. Severe pains of the limbs or of the head are occasionally noticed. After the disease has subsisted for a certain length of time, the muscles, apparently from want of use, shrink and waste, and become flaccid. Sometimes a degree of œdema supervenes, with a tendency to gangrene, especially on blistered surfaces.

In hemiplegia, the vital and natural functions are but little, if at all impaired. The bowels indeed are sometimes torpid; but there is no reason to believe that the loss of nervous power extends, in common cases, to any of the internal organs. It is a curious circumstance too, that the senses are in general but little affected. The phenomena of hemiplegia, in fact, as Dr. Yelloly has remarked,* are principally confined to such parts as derive their nerves from the medulla oblongata and spinal marrow, and in this we may trace an important distinction between palsy and apoplexy.

Effects of palsy.—The mental faculties almost always suffer. Sooner or later the intellect is weakened, the memory more or less impaired, and even the passions are sensibly affected. A mind once vigorous, firm, or placid, becomes after a severe paralytic attack, weak, timid, capricious, and fretful. To these general rules there may be found, however, many exceptions.

Instances are on record of *perfect* recovery from the attack of hemiplegia, but they are extremely rare. Sometimes, as I have already mentioned, the paralytic seizure is only the precursor to a complete fit of apoplexy, which commonly proves fatal in a few days. The more usual progress of the disease, however, is characterized by a slow but gradual and imperfect amendment, continuing for two or three months, until the patient, with some support, is able to walk about, dragging along the paralytic limb. After remaining in this helpless condition for some years, and frequently suffering from attacks of pain of the head or giddiness, he either dies of an attack of apoplexy, or of some new disease. In a severer form of the affection, the patient never makes any advances at all towards recovery. For many weeks or months he is confined to his bed, and at length gradually falls into a state of lethargy, or coma, in which he dies.

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* Medico-Chirurgical Transactions, vol. vii. page 214.

Morbid anatomy.—The opinions already delivered, regarding the proximate cause and general pathology of apoplexy, apply also, in a great degree, to hemiplegia, as will be rendered evident by a notice of the appearances usually found on dissection of those who either actually die of palsy, or who during life had experienced one or more paralytic attacks.

In those cases of paralysis which pass quickly into apoplexy, the common apoplectic appearances are met with; in most instances, extravasations of blood; but occasionally serous effusion into the ventricles. In the more chronic forms of palsy, there is no appearance so common as discoloration, or some other diseased state of the corpora striata; but various other organic læsions of the brain and its membranes have been also observed. Of this kind are—encysted suppuration, induration of a part of the brain, flaccidity and softness of a portion of its substance, effusions of serum in various parts and in various quantities, tumours, and lastly, clots of blood imbedded in the substance of the brain, or sometimes only cavities, in which it is presumed that such clots had formerly existed. The latter class of appearances have given rise to considerable discussion. It has been supposed that blood extravasated during the apoplectic or paralytic fit may in time become absorbed; and that in proportion to the degree of this absorption, will be the more or less perfect recovery of the patient. These conclusions appear to have been hastily drawn, for they are not borne out by more recent observation.

Much importance has always been attached to the singular circumstance of the morbid appearances presented by the brain having their seat in the side opposite to that of the paralytic affection. The fact was noticed in the writings of Hippocrates, Galen, and Aretæus, and its correctness is sanctioned by many modern authorities, more especially by the accurate observations of Morgagni and Dr. Baillie. Although exceptions to it have unquestionably been met with, it must yet be acknowledged as a phenomenon of very general occurrence; and from the earliest times attempts have been made to account for it.

The notion of a decussation of nervous fibres was originally entertained by Aretæus, and applied by him in explanation of the fact. The subject has since been often brought under discussion, but by no one in so elaborate a manner as by Dr. Yelloly, in the first volume of the Medico-Chirurgical Transactions.* The principle of *decussation* seems to be generally admitted, but the difficulty consists in determining its seat; some placing it in the corpus callosum, others in the tuberculum annulare, the medulla oblongata, or the medulla spinalis. Pathologists have supported their respective opinions by much ingenious argument: but in the estimation of Dr. Yelloly, the preponderance is considerably in favour of that which makes the tuberculum annulare the seat of decussation.

It is not always that traces of morbid structure are discoverable in those who have suffered during life from hemiplegia; but this circumstance does not militate against the notion of an identity in the pathology of hemiplegia and apoplexy. Such an opinion, moreover, is corroborated by the identity of their predisposing and exciting causes; and, upon the whole, were it required to state in a few words the relation of these diseases to each other, it might be urged, that there *are* points of distinction between them, yet too obscure to be defined with accuracy; and that, in common practice, they may be safely viewed as modifications of each other.

PARAPLEGIA.

This term is applied to the paralytic condition of the lower half of the body, and though far less frequent than hemiplegia, it ranks next in importance to it. The loss of nervous power is here entirely confined to the pelvis and lower extremities. This affection sometimes arises, as will hereafter be mentioned, from local causes injuring the spinal marrow; but it is as a disease depending upon some morbid state of the cerebral system, that I am now to consider it. Dr. Baillie is, I believe, the first who fully established the important pathological principle which I am now to illustrate, and to his paper I am indebted for the following outline of this variety of palsy.†

Cerebral paraplegia.—It occurs chiefly in the middle or more advanced periods of life, and is more frequent in men than women. The approach of the disease is never sudden. At first there is only a sense of numbness, with a stiffness or awkwardness of motion in the lower limbs; but by degrees the patient is unable to walk without support. As the disease advances, the urine passes off, at first in a feeble stream, and at length involuntarily. The urine is always alkaline, and deposits the phosphatic sediments in abundance. Stone in the bladder, therefore, frequently succeeds. The bowels are costive, but from loss of power over the sphincters, the motions frequently pass unrestrained by the will. Patients in this complaint may live for a long time; but at the end of some years they usually die with their constitutions entirely exhausted. Sloughy ulceration and gangrene of the skin covering the hips and sacrum frequently occur towards the close of life, and contribute to hasten the fatal result. In a few instances recovery takes place.

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* Page 185, et seq.

† Vide Transactions of the College of Physicians of London, vol. vi. p. 16; London Medical and Physical Journal for May, 1827, vol. lvii. p. 392.

The connection of these symptoms with disease of the brain has been in some cases proved by dissection; and in others it has been rendered almost equally certain by the general symptoms of cerebral disease present at the same time. Dr. Baillie has seen paraplegia accompanied by giddiness, drowsiness, impaired vision, paralytic dropping of an eyelid, defect of the memory, loss of mental energy, and lastly, numbness and weakness of one or both of the upper extremities. These circumstances afford strong evidence that the primary cause of disease exists within the cavity of the skull, and that it consists in some mode of pressure upon the brain.

Local palsy.—There are a variety of cases in which the loss of nervous power is confined to a particular organ, or muscle, or set of muscles; and yet from the manner in which the affection begins, from the symptoms which attend it, and the course which it afterwards runs, it is obvious to the pathologist that the source of the mischief must be sought for in the great centre of the nervous system. Innumerable degrees of paralytic affection may be observed in practice, from the torpor and weakness of a single finger, up to complete apoplexy, in which sense and motion perish throughout the whole body. To enumerate these different partial palsies would be unnecessary. It is sufficient to say, that among the most frequent will be found amaurosis, or palsy of the optic nerve; palsy of the muscles of one side of the face; palsy affecting the muscles of deglutition (dysphagia paralytica); palsy of the neck of the bladder; and palsy of an arm, a hand, or a finger. It is wholly beyond our power to comprehend how it happens that a cause, operating upon the brain generally, should produce effects so partial, and at such a distance from the actual seat of disease.

Palsy of the nervous filaments.—The difficulties which we have to encounter in any inquiry into the pathology of paralysis, are greatly increased when the investigation is extended to those cases of general and partial palsy, which being to all appearance unconnected with any derangement of structure or function in the encephalon, must be presumed to depend on the condition of the nerves themselves. That such cases do occur is unquestionable; and it must be left to future inquiries to determine in what manner these apparent inconsistencies are to be reconciled.

In the year 1820 I had an opportunity of seeing an instance of general palsy of the kind now alluded to, the history of which is fully detailed in the London Medical Repository.* The disease ran a very singular course, terminating, after the lapse of above eight months, in the complete recovery of health. During the whole of this long period there did not occur one symptom which could warrant me in looking to the brain as the source of the disorder. The vital and natural functions were also undisturbed, nor was there any evidence of disease within the theca vertebralis. It is obvious, therefore, that this affection was, in its pathology, totally distinct from the ordinary forms of paralysis. A case very similar in its leading symptoms, but different in its termination, is recorded by Dr. Powell.† A brief notice of another case (terminating favourably) may be found in Dr. Johnson's Medico-Chirurgical Review.‡ Dr. Powell appends to the detail of the former case some valuable reflections on the general pathology of palsy. His principal aim is to show that certain paralytic affections, both partial and general, originate in a peculiar condition of the *nerves alone;* that they are independent of any morbid affection of the blood-vessels of the head; that they are produced in many instances by cold, and in some by sympathy with particular states of the stomach, or other distant local irritations. The nervous fibrillæ are, in this condition of disease, rendered incapable of transmitting impressions, either to or from the cranium.

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* Vol. xvi. p. 265, October, 1821.

† College Transactions, vol. v. p. 105.

‡ For April, 1831, p. 516.

There was reasonable presumption, in the case just detailed, that *cold* was the exciting cause; and this opinion of its origin is strengthened by a consideration of the frequency with which cold operates as the cause of paralytic affections of a more partial kind. The muscles of the face, of the arm, and of the foot, have often been found paralysed by exposure to cold, more especially when conjoined with moisture. Various instances of the kind might be quoted from the writings both of ancient and modern authors.* The union of palsy and rheumatism is a frequent occurrence in the lower ranks of life, and is therefore familiar to those who are in the habit of attending workhouses and parochial infirmaries.

Spinal paraplegia.—Paraplegia depends, in a variety of cases, upon a diseased state of the spine, produced by inflammation or mechanical injuries. A very curious and instructive case of acute inflammation of the theca vertebralis, terminating in paraplegia, was seen by me in 1829, and is recorded by Dr. Oke.† The scrophulous incurvation of the spine, to which infants and children are liable, is attended also in its progress by paraplegic symptoms. This disorder, from having been very accurately described in the works of Mr. Pott, has received the name of Pott's Palsy.

Other partial palsies.—A paralytic condition of particular muscles is brought on in some instances by violent exercise of them too long continued, or by some external violence done to them. There is reason to believe, that occasionally it is connected with inflammation of the substance of the nerve, or of its covering. There is still another class of partial palsies, which apparently depend upon some irritation in the bowels.

Saturnine palsy.—By far the most common, however, of all the causes of partial palsy, is the poison of lead, which appears to exert some peculiarly noxious power over the nerves of the fore-arm and hand. Innumerable instances of the deleterious effects of lead, in the several shapes of colic, palsy, and epilepsy, are met with among plumbers, painters, workers in lead-mines, manufacturers of white lead, and others, whose occupations expose them to the influence of this metal.* It is certainly a curious circumstance, that some constitutions should be so much more easily affected by the poison of lead than others. There are persons, who, in a very short time, suffer severely from it in their general health, while many receive no injury, though exposed to its influence during a long series of years. The remarkable effect of lead, however, now adverted to, and called in common language the *dropped hand*, is infinitely more common among painters, than any other class of persons engaged in lead-works; and it is probable, therefore, that the constant exercise of the fore-arm in painting has some influence in producing this peculiar symptom.

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* Consult Dr. Cooke's excellent work on "The History and Method of Cure of the various Species of Palsy," pp. 64 and 95.

† Oke's "Practical Examinations." London, 1831, p. 46.

Prognosis.—Palsy is a complaint, which, from very early times, has been considered almost incurable; nor have the labours of modern physicians succeeded in removing this opprobrium from medical science. It is sufficient to mark the numbers of paralytic persons in our streets, to form an idea of the inutility of medical practice in this disease.

TREATMENT OF PARALYTIC AFFECTIONS.

The close analogy existing between the pathology of apoplexy and that of palsy, has led to the employment of blood-letting, both general and topical, in every variety of palsy, but more especially in hemiplegia; and very decided benefit has been occasionally derived from this practice. It is obviously best adapted for those cases, the onset of which is attended with evidences of general plethora, or of strongly marked determination to the head. The evacuation of blood, by cupping from the nape of the neck, is *generally* to be preferred to bleeding from the arm; but it is quite impossible to lay down rules for the administration of this remedy, considering how much must always depend upon the particular constitution and habits of the patient. After copious bleeding, an opiate may be given, with advantage, when pain and restlessness are present.

All authors agree as to the benefit which may be reasonably expected from cathartic medicines. Jalap, scammony, and the more stimulating purgatives, are to be preferred; and their combination with calomel affords a powerful means of relieving tension and congestion within the head. Emetics have found many advocates upon the continent; but the inconvenience they occasion is great, and the benefit from them very doubtful. Blisters to the nape of the neck have afforded considerable relief, but more advantage is derived from them when applied to the shaved scalp.

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* For a full account of the peculiarities of the paralysis saturnina, I must refer to Clutterbuck, "On the Poison of Lead."

These observations apply to the management of hemiplegia in its early state. The system of treatment must of course be different, when the disease has subsisted for any length of time, and when all traces of affection of the head have ceased. Medicines of a stimulating quality have then been administered, with a view of rousing the torpor of the nervous power. Externally, physicians have had recourse to frictions, blisters, issues and setons, sinapisms, embrocations of various kinds, warm bathing, electricity, and galvanism. The waters of Bath and Buxton enjoy a considerable and not undeserved reputation for efficacy in paralytic cases. Internally, tonic medicines of different kinds have been commonly directed, more especially aromatics, the sub-carbonate of ammonia, the heating gums, chalybeates, bitters, and plants containing an acrid essential oil, such as mustard and horseradish. It may often be proper to give a trial to these remedies, but the prospect of advantage from them is not great.

Medicines of a narcotic quality have also been at different times recommended in the cure of palsy; more particularly the nux vomica, and the several preparations of strychnine, the arnica montana, and the rhus toxicodendron. That these drugs produce some very remarkable effects upon the nervous system, cannot be questioned. They will frequently occasion twitchings and convulsive motions, and a sense of tingling or pricking in the paralytic limbs; but these effects are, in many cases, rather painful than useful to the patient. Some instances are recorded of apparent benefit from them; but, upon the whole, they cannot be trusted to, and there is always some danger of their proving injurious to the general health.

The treatment of cerebral paraplegia is to be conducted on the same general principles. Dr. Baillie states, that though no plan of treatment has proved very successful, yet that he has employed with advantage cupping, blisters, a seton in the nape of the neck, purgative medicines (consisting of the compound extract of colocynth, jalap, and the neutral salts), and an alterative course of mercurial preparations. The same author further states, that in a few instances he has seen benefit from frictions to the lower limbs, continued for an hour twice a day, and in one case advantage was derived from electric sparks. He is disposed also to think favourably of tepid bathing, both in fresh and sea water.

In the management of the different varieties of *partial* palsy, the physician must be guided by the pathological views recently adverted to. Some do not appear to demand any remedial treatment, while others are as decidedly benefited by the judicious administration of medical and surgical aid. It would be unnecessary to go into any detail on this subject; but in consideration of the frequent occurrence of amaurosis and of saturnine palsy, as objects of attention to the physician, I shall make a few remarks on the treatment particularly applicable in these cases.

AMAUROSIS.

Palsy of the optic nerve generally comes on gradually, being preceded by the appearance of motes or small bodies seen floating in the air, or of a mist or network, like black lace, spread before the eye. It has for its remote causes exposure to intense heat or light, employment of the eye in very delicate pursuits, irregularity of the digestive organs, strong mental emotions, and irregular habits of life. In some cases it is connected with an inflammatory or congestive state of the vessels of the brain, and is found associated with other forms of nervous disease. An hereditary predisposition to amaurosis has been noticed in several families.

Very ample evidence has been brought forward, by Dr. Vetch* and others, of the benefit to be derived from general blood-letting in amaurosis. Carried to the extent of producing syncope, it has proved, in many cases, the surest means of combating that congestive state of the deep-seated vessels of the eye, upon which the paralytic affection of the nerve appears mainly to depend. The necessity of this evacuation, however, is not to be judged of by the usual symptoms of ophthalmic inflammation. Its effects are to be assisted by the application of leeches, by purgatives, and blisters. Mr. Travers is less favourable to the practice of large depletion, probably from having seen the disease in a different class of patients. He recommends, in the first instance, the employment of medicines calculated to regulate the functions of the digestive organs, and subsequently, such general tonics as the system can bear. Emetics have been much employed by continental physicians in the treatment of amaurosis.

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* Practical Treatise on Disorders of the Eyes, by John Vetch, M.D. London, 1820.

PARALYSIS SATURNINA.

The origin of saturnine palsy has been already adverted to. Its cure is always tedious and often precarious. Mercury has been strongly recommended by Dr. Clutterbuck, who relates several cases in which its good effects were evident. From my own observations, however, I should be inclined to form a very different estimate of its efficacy; and, in its stead, to recommend for general adoption the plan commonly and so successfully pursued in the hospital at Bath, *viz.*, the application of blisters to the wrist; a warm bath twice in the week; warm pumping on the affected joint; occasional aperients, and the use of the battledore splint, as advised by Dr. Pemberton. The drinking of the Bath waters may perhaps contribute to improve the general health; but I am persuaded that the only effectual system of treatment consists in the steady and long-continued employment of local stimuli. On the Continent the warm sulphureous waters of Barege and Aix-la-Chapelle are highly extolled.

PARALYSIS AGITANS.

A few lines may be devoted to the consideration of that nervous affection which has been called shaking palsy, or the paralysis agitans. In this disease the muscles of one or both the superior extremities are in a state of continual tremor. By degrees the trembling extends to one or both legs, and the patient walks with increasing difficulty. The body is bent forward. Articulation is indistinct, mastication troublesome, and at length the saliva dribbles from the mouth. As the muscular weakness increases, the agitation of the body becomes more and more vehement, continuing even during sleep. Delirium, drowsiness, and other marks of exhaustion, precede the fatal event. The complaint often lasts for many years, without impairing in any degree the mental faculties. Such a condition of nervous disorder is peculiar to persons advanced in life.

There can be little doubt that it has for its proximate cause some morbid state of the medulla oblongata and upper portions of the spinal marrow, the result of those alterations which time produces on the cerebral textures. Medicine appears to exert no influence whatever on this disease. Blisters to the nape of the neck, with aperients, are indicated, but they have been tried and found as ineffectual as the class of tonics. Upon the occurrence of giddiness, however, or any unusual aggravation of the ordinary symptoms, cupping glasses may be applied to the neck, and a moderate quantity of blood abstracted.*

CHAP. IV.

EPILEPSY.

Nosological Distinctions. Phenomena of the Epileptic Paroxysm. Varieties. Natural Progress of the Disease. Prognosis. Predisposition. Dependence of Epilepsy on derangement of the natural Functions. Stomach and Bowels. Uterus. On some primary morbid Condition of the Encephalon—functional—structural. Practice during the Paroxysm. Principles of Treatment during the Interval. Agency of antispasmodic Medicines.

MANY circumstances conspire to give an interest to epilepsy: the great frequency of the disease, the class of persons among whom it chiefly prevails, the alarming character of its symptoms, the obscurity in which its pathology is involved, and the difficulties, which, from the earliest times, have been experienced in the relief of it. No other disease has ever procured for itself so large a share of popular attention. In remote times it was universally attributed to the immediate agency of evil spirits, and viewed with a kind of reverential awe, which obtained for it the name of *morbus sacer*.* Among the Romans, the forum broke up when an epileptic was seized with a paroxysm of his disease.

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* Vide Parkinson's "Essay on the Shaking Palsy." London, 1817.

Although the characters of epilepsy are thus sufficiently distinct to have attracted in all ages the notice of the world, considerable difficulty has been found in contriving a definition of it which may include every form of the complaint; and not less, perhaps, in establishing the precise nosological distinction between it and the other varieties of convulsive disease. This may chiefly be traced to the want of a proper understanding of the true meaning of *disease*, in opposition to the *symptoms* by which it is characterized. Convulsion is a symptom, and not a disease; though many nosologists have so termed it. Epilepsy, on the other hand, is strictly a disease, consisting of a succession of paroxysms of *convulsion*. These paroxysms, however, in order to constitute true epilepsy, must be accompanied with *insensibility*, continuing for a certain time after the paroxysm is at an end. It is thus that epilepsy is distinguished from hysteria.

The *species* of epilepsy which have been described by authors are merely technical expositions of its various exciting causes. Like many other affections, it is both idiopathic and symptomatic; but the phenomena of the epileptic paroxysm are, in both cases, the same. I shall first describe the usual appearances, and then notice the most important of those varieties which have been recorded.

Symptoms.—The epileptic fit for the most part occurs suddenly. The patient falls to the ground; and the disease has hence received the appropriate name of the *falling sickness*. When the complaint is fully established, it is usual for the patient to experience certain warnings of the approach of a fit, which, though lasting only a few seconds, enable him to make some preparations for it. The most frequent of these warning symptoms are headache, giddiness, dimness of sight, or flashes of light passing before the eyes, ringing in the ears, and coldness of the extremities. Some persons are apprised of the approach of the fit by the appearance of particular spectres;

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* To the physician, nothing certainly can be more instructive than observing, that of the sick who were brought to Our Saviour to be healed, the greater number were paralytics, and those who were possessed of "unclean spirits." While he learns from this how unchanged are the features of these diseases, he cannot, on the other hand, fail to appreciate, in all its force, the mighty miracle of their cure.

but the most common of all epileptic warnings is that singular sensation of tremor, or coldness, or numbness, which has been called the *aura epileptica*. It begins at the extremity of a limb and gradually ascends to the head, when the paroxysm of coma and convulsion ensues.

During the fit the convulsive agitations of the body are violent. The eyes are fixed and reverted, and the pupils permanently contracted; the teeth gnash against each other; the tongue is thrust forward, and often severely bitten, and there is foaming at the mouth; the breathing is irregular and laborious, and the pulse for the most part small and contracted. Complete insensibility prevails. The fit varies in duration, from a few minutes to a quarter or even half an hour. In some cases it has lasted even longer. On its cessation the patient remains for some time motionless, insensible, and apparently in a profound sleep. From this he recovers by degrees, but without any recollection of the circumstances of the fit. He is left weak and exhausted, and for the rest of the day generally complains of a degree of stupor and oppression in the head. In many cases this has amounted to actual *mania*, continuing for two or three days.

The periods of recurrence of the fits are too various to admit of being stated with any degree of accuracy. When the disease first developes itself, the intervals are long, perhaps two or three months. As it becomes more firmly rooted in the system, the fits recur with a corresponding frequency, until at length the patient hardly passes a day without one. It is important, however, to bear in mind, that genuine epilepsy never occurs oftener than this, except in very old and aggravated cases. When, therefore, a person, not habitually subject to fits, has more than one in the day, we may reasonably conclude that the disease is of an *hysterical* nature.

Epileptic fits occur at all hours; but much more commonly during the night than in the day; sometimes on first going to sleep; but more usually on waking in the morning. It is reasonable to conclude that there is some peculiarity in the state of the brain during sleep, which is highly favourable to the developement of the epileptic paroxysm.

Varieties.—The varieties in the phenomena of the epileptic fit are very interesting: and they have induced Dr. Prichard (from whose valuable work I have derived great assistance in the present and succeeding chapter) to found upon them a three-fold division of the disease.* The first, or common form, is that which I have just described; characterized by insensibility, and general convulsions, or *struggling* of the whole body. The second is the *tetanoid* epilepsy, distinguished by the loss of sense and consciousness, with tonic spasm or *rigidity* of the muscles. There is the same *suddenness* of seizure in this as in the former species; and though the attacks are very different in their aspect, they are manifestly allied in their nature. The third form of epilepsy is marked by fits of insensibility, with perfect *relaxation* of the muscular system. Dr. Prichard distinguishes this by the term *epileptic leipothymia.* It bears a close resemblance to the apoplectic state; but its recurrence in paroxysms, and the whole tenor of the disease, prove it to be connected pathologically with epilepsy.

To these may be added a fourth and still more singular variety, to which authors have given the name of *catalepsy.* The reality of such a state of disease has frequently been called in question, but without sufficient reason. One instance of it has fallen under my own observation. The affection consists in paroxysms of reverie, in which the patient remains unconscious of external impressions, and incapable of voluntary motion, though retaining the position in which he was first seized. The fit seldom lasts more than a few minutes, and leaves no traces of itself in the memory. The disease has in several instances passed into common epilepsy.

It has been noticed by authors, that some degree of consciousness is occasionally preserved in the genuine epileptic paroxysm; but such an occurrence is very rare, and seldom permanent, proving only a prelude to the total abolition of sense. In a few cases the recovery from the fit has been as sudden as the seizure; nor are the succeeding headache and stupor observed invariably.

Effects.—Such are the more common modifications of the epileptic paroxysm. In whichever way the disease manifests itself, it goes on to produce other and more serious injury to the constitution. In the first place, the mental faculties become gradually and permanently more and more impaired; the memory fails, and a state of mind closely verging on idiotism is at length brought on. In almost all epileptics a vacant expression of countenance is observable, which once seen cannot easily be forgotten. Yet here, too, we may incidentally mark the endless variety in the phenomena of disease. It has happened that a person, subject in youth to epilepsy, has risen in maturer years to the highest honours of a state, and been celebrated for political and literary talents.

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* Treatise on the Diseases of the Nervous System, by Dr. Prichard. London, 1822, vol. i. p. 87.

Epilepsy, when once thoroughly rooted in the habit, will generally be found to bring on, sooner or later, some other form of encephalic disease—hydrocephalus, mania, apoplexy, or palsy. The complication of epilepsy with mania is at once the most frequent and the most formidable. Of one of these, in most instances, the epileptic patient dies; but it is not to be overlooked, that epilepsy sometimes terminates, in the third place, fatally and suddenly, without inducing any secondary affection. This, though seldom witnessed among adults, is not uncommon in the epilepsy of children; and assuredly it cannot be a matter of surprise; it can only lead us to reflect, how wonderful must be the structure of that delicate system, which can resist, in ordinary cases, the repeated attacks of so dreadful a disease, and how little pathology can assist us in unravelling such a mystery.

Morbid anatomy.—On the morbid appearances observed in those who die of epilepsy, I have nothing to state of any importance. A turgid condition of vessels, both in the membranes and substance of the brain, has been noticed in some cases, with or without effusion of serum. Tumours, exostoses, and abscesses, have been discovered in others; but in none has dissection thrown any light on the peculiarities which distinguish the convulsive from the other varieties of encephalic disease.

Causes.—In offering a few remarks on the predisposition to epilepsy, I have first to notice, that it is obviously an *hereditary* disease in many instances. In others, the parents and relatives of the patient may not, it is true, suffer from actual epilepsy, but they will often be found affected by other maladies of the same class, such as palsy, connate idiotism, or mania. The intimate connection subsisting among the different forms of nervous disease enables us to trace, in these circumstances, the same principle of hereditary predisposition.

Epilepsy undoubtedly prevails, for the most part, in what has been termed the *nervous* habit or temperament of body.

Dr. Cullen designated this peculiar condition of the frame by the term *mobility of constitution*, and it entered deeply into all his speculations concerning epilepsy. It is that state wherein impressions, both on the mind and body, produce more than their usually corresponding effects,—in which hope elates, and fear depresses, and wine excites, more than could reasonably be anticipated. To this circumstance alone are we warranted in attributing the well-established fact, that epilepsy is mainly the disease of early life. It was a maxim of Hippocrates, that epilepsy never *originates* after the twentieth year. There are exceptions to the rule, but the remark amply proves the extent and accuracy of his researches.

Epilepsy is generally considered as equally frequent in both sexes. My own observations would lead me to believe, that it is considerably more prevalent among females than males; and the fact, if correct, may be attributed partly to the greater *mobility* of habit in the female sex, and partly to the peculiar character of the *exciting causes* of the disease. These constitute, in fact, the most interesting points in the pathology of epilepsy, and they well merit a detailed investigation. I may begin by noticing the connection of epilepsy with a deranged state of the natural functions, constituting the *epilepsia occasionalis* of Dr. Cullen; and then proceed to show how it depends, in other cases, upon some primary morbid condition of the encephalon. This latter variety of the disease Dr. Cullen has designated by the title of *epilepsia cerebralis*.

Enteric epilepsy.—The symptomatic or *occasional* epilepsy is of two kinds;—the enteric, or that which is connected with disturbance of function in some portion of the alimentary canal; and the hysteric, or that which has its origin in disturbed functions of the uterus. Speaking generally, we may say, that the first is peculiar to children under the age of fourteen; and the second to women between the ages of fourteen and twenty.

The first source of that irritation in the alimentary tract which leads to epilepsy, is painful dentition. It is a fruitful cause of the encephalic diseases of children, and of none more commonly than of epileptic fits. The second is acidity in the stomach, its distension by wind, or the mere detention in it of crude and undigested aliment. In infants of high natural irritability of frame, these disordered conditions of the stomach frequently lead to paroxysms of convulsion; and in many cases they recur, and otherwise exhibit all the characters of perfect epilepsy.

At a somewhat more advanced period of life, there is no kind of irritation which so commonly proves the source of epileptic fits, as the presence of *worms* in the intestinal canal; but almost any disorder of the bowels will, in certain habits and states of body, bring on a tendency to convulsion. We see this strikingly displayed in the severe cramps that accompany the malignant cholera. The prognosis, in all the forms of enteric epilepsy, is naturally more favourable than in any other variety of the disease; because the source of irritation is both more obvious, and more under our control.

Hysteric epilepsy.—The hysteric epilepsy is an equally frequent but much less manageable kind of disorder. It prevails extensively among the most delicate of the sex, at the most interesting period of their lives; often resisting the most active and judicious treatment, and degenerating into that permanent and almost incurable form of cerebral epilepsy which we are next to notice. Hysteric epilepsy commonly affects females about the commencement of the catamenial epoch, or shortly afterwards, when the flow is scanty and difficult. Occasionally it takes place at a later period of life, in accidental obstructions of the menses. It chiefly prevails among those of sanguine temperament, with full development and vigorous action of the circulating system, and a delicate irritable constitution. There is nothing peculiar in the character of the fits of hysteric epilepsy, except that their recurrence frequently corresponds with the regular catamenial periods.

Idiopathic epilepsy.—Epilepsy, as I have already hinted, depends in some instances primarily upon a morbid condition of the encephalon, and is totally *independent* of disturbed function of the abdominal viscera. Like the preceding variety, cerebral epilepsy is of two kinds; the one connected with *functional*, the other with *structural* disease of the brain and nervous system.

The obscurity which attaches to the functions of the brain and nerves, makes it impossible to speak with any precision on that difficult point in the pathology of epilepsy at which we are now arrived; but a variety of arguments might be adduced to show, that there exists primary functional disturbance of the brain, leading to the epileptic paroxysm. The hereditary predisposition to the disease; the absence of all appearances after death, excepting such as are common to other forms of chronic disease of the encephalon; and the recurrence of the fits at irregular periods, and particularly at night, are strong confirmations of this doctrine. To these we may add the peculiar character of many of the *exciting* causes of the fit, namely, violent mental emotion, and the operation of certain poisons, both of the narcotic and morbid kind. Arsenic and the muriate of barytes have been strongly suspected of inducing epilepsy. In children a common effect of the poison of small-pox is an epileptic paroxysm. All this tends to show that the convulsive disorder depends simply on disturbance of function. How far the circulation within the brain contributes to its development is a different, but not less interesting subject of inquiry.

Epilepsy from vascular distention.—It is impossible to overlook the fact, that in a very large proportion of the cases of cerebral or idiopathic epilepsy, and in many of those which are manifestly connected with disturbed function of the bowels and uterus, there is preternatural fulness in some part of the vascular system of the brain. This is an important feature in the pathology of epilepsy; and if I have reserved all mention of it to this time, it is because I feared that its earlier notice might divert the mind of the student from those other views of the complaint, which, though obscure, and therefore less inviting, are yet equally necessary to a thorough understanding of it.

The grounds on which we establish the connection of epilepsy with a state of congestion or over-distention of the cerebral blood-vessels, may be thus briefly enumerated. Epilepsy occurs in persons of full habit of body, and indolent mode of life; the fit is frequently preceded by headache, flushings of the face, and throbbing of the carotid and temporal arteries; it is brought on, in many cases, by great muscular exertion, as in parturition, by stooping, intoxication, heated rooms, and above all by violent fits of coughing, such as occur in severe hooping-cough. The hysteric form of the disease is only one of those many consequences of obstructed menstruation, of which the prevailing character is irregular determination of blood. The appearances on dissection, when observed, are those of sanguine accumulation in the brain; and lastly, we may bring forward the well-attested good effects which have followed that depleting system of treatment which I am about to recommend.

Epilepsy from exhaustion.—While I thus express myself on the subject of epilepsy, as connected with turgescence of vessels, I am not insensible to the fact, that paroxysms of *convulsion* are occasionally connected with a state of cerebral circulation directly the reverse; as when we see them following large bleedings at the arm, double amputations, or excessive purging. Dr. Cullen, indeed, appears to have overstrained his favourite theory of epilepsy from *collapse*, but it must not be on that account excluded from our reasonings.

Epilepsy from structural disease.—The last point which requires consideration previous to entering on the subject of treatment, is the connection of epilepsy with chronic disorganisations of some one of the structures within the cranium. Those which authors have most usually noticed as producing epilepsy, are, spicula of bone detached by some injury from the internal table of the skull; ossifications of the falx; tumours of various kinds, attached either to the bones, membranes, or parenchymatous substance of the brain; and lastly, foreign bodies lodged there. Numerous cases are to be found on record, of epilepsy from these and similar causes; but, instead of pressing them on the notice of the student, I would rather wish him to understand how rare they are in comparison of those which are simply the result of *morbid action*, in many of which we may reasonably hope, by judicious measures and steady perseverance, to produce an alleviation, and even, in a few, the permanent cure of the disease.

Prognosis.—After what I observed in the outset of this chapter, it is unnecessary to state formally the difficulties which the physician has always to encounter in the management of this obstinate disorder. In many cases they are such as no skill can overcome. In others, however, a regular system of treatment, founded on those pathological views which I have attempted to explain, is productive of decided benefit, whilst a few, which to the pathologist would have appeared hopeless, have yielded to a practice wholly *empirical.* These considerations should encourage us in our attempts to cure the disease; and the following may be viewed as the most important of the principles on which a rational treatment of epilepsy is to be conducted.

Treatment.—During the fit no remedial measures of any importance are either practicable or necessary. Our efforts are to be reserved for the intervals of the fits, and our aim should be to prevent their recurrence. In effecting this, the following are to be the chief objects of attention:—

1. To remove all sources of irritation.

2. To moderate the afflux of blood upon the brain.

3. To alter that morbid condition of the nervous system, on which convulsion depends; and to strengthen the body.

To one or other of these principles may be traced the good effects of all the medicines and plans of treatment which have at different times proved efficacious in the cure of epilepsy. They are far from being incompatible with each other. On the contrary, it is often necessary to combine them all in the management of an individual case.

1. Having already described the different kinds of irritation in the body which occasion an epileptic fit, I have only now to state, that in the epilepsies of infants and children much may be done by free scarification of the gums; by the administration of an emetic; by occasional smart doses of purgative medicines; by the more liberal use of mild aperients and absorbents; and by strict attention to diet and regimen. Where the concomitant symptoms afford evidence of the presence of worms, anthelmintics are of course to be exhibited, more especially the oil of turpentine in the full dose of six drachms. This medicine exerts, in the dose of one drachm repeated three times a day, a power of allaying that irritable state of the nervous system, with which the convulsive paroxysm is so intimately connected. Dr. Prichard adds, that it contributes to produce regular and moderate evacuations.

When the irritation is seated in the uterine system, as manifested by the concurrent symptoms (scanty and laborious menstruation, and the peculiar periods at which the fits recur), our measures must in part be directed to restore the natural determination to the uterus. Recourse may be had to the warm bath, or semicupium, stimulating enemata, relaxing medicines, as the antimonial diaphoretics, and the different kinds of *emmenagogues*. Regular exercise, occasional purgatives, and in some instances an issue or seton in the arm or neck, have also afforded very efficient aid.

2. The second principle in the treatment of epilepsy is the obviating general plethora, and the taking off that peculiar determination of blood to the vessels of the head, which is one

of the most important features in the pathology of the disease. Such a principle is equally applicable to the sympathetic as to the primary, or cerebral, varieties of epilepsy. Where the disease is still recent—where it occurs to adults and young persons of robust habit—and more especially where, in the intervals of the fits, the patient complains of headache, giddiness, stupor, or any other mark of permanent fulness in the blood-vessels of the brain, bleeding from the arm is not to be omitted. It may even be necessary to repeat it, before the tendency to accumulation of blood about the head can be thoroughly subdued.

Keeping the same important object in view, the practitioner will aid the effects of blood-letting by directing a mild and unirritating diet, early hours of rising and going to bed, regular exercise, abstinence from all fermented liquors, and cold washing of the head and neck. Under particular circumstances, he will substitute for bleeding, cupping between the shoulders, blisters to the nape of the neck, and the steady use of purgative medicines. For children he will direct leeches to the temples. It is hardly necessary to add, that rules can never be framed for guiding the mere *detail* of treatment. This more particularly applies to a disease which often lasts for years, and occurs under an infinite variety of aspects. The judgment of the practitioner is here alone to be trusted to.

3. *Agency of antispasmodics.*—Lastly, the physician will attempt to alter that peculiar condition of the brain and nervous system with which convulsion is associated. Experience has shown that medicines of the *narcotic* kind possess considerable power over it. Many of them have accordingly been employed in epilepsy, and with advantage; more particularly camphor, opium, hyoscyamus, and stramonium. Further, there are the strongest grounds for believing, that the morbid irritability of the brain and nerves, on which spasm depends, is often connected with general constitutional *weakness.* Hence it is, that many of the most powerful of the *antispasmodic* medicines are in fact *tonic.* Of these I may specify, as having obtained considerable reputation in the treatment of epilepsy, bark, steel, and valerian. In the epilepsy of children, after appropriate purgatives, chalybeates, such as the carbonate of iron, or steel wine, are decidedly efficacious.

But it must be confessed, that we are too often unable to form any idea of the precise nature of that morbid state of the nervous system present in convulsive diseases. This feature in the pathology of epilepsy is important with a view to practice. It shows that some of the medicines which have acquired a character for the cure of the disease, may have deserved it, although the mode of their operation be as little known to us, as the state of brain on which the epileptic paroxysm depends. It is impossible, for instance, to overlook the numerous cases which are on record of the *permanent* cure of epilepsy by the argentum nitratum; and though we were to allow that a large proportion of these are inaccurately reported, still we must acknowledge the *alleviation* afforded by the remedy. Great caution is necessary in the internal administration of the argentum nitratum, from its tendency to blacken the skin, a deformity which does not readily subside. Arsenic, and the oxyd of zinc, have, in the hands of other practitioners, been found not less successful; and upon the whole, we are compelled to believe, that these and similar drugs (properly denominated *nervine*) may really be entitled to that credit which a too scrupulous pathology would deny them.

CHAP. V.

MANIA.

Controversy regarding the Nature of Maniacal Aberration. Manner in which Mania originates. Progress of the Disease. Varieties in the Maniacal Character. Prognosis. Morbid Appearances. Predisposition to Mania. Exciting Causes, physical and mental. Pathology of Mania. Management of the Insane, moral and medical.

It is impossible for me to enter on the discussion of this subject without some degree of hesitation. The extreme obscurity that pervades it, arising out of our ignorance of the mode in which the operations of mind and body are connected;—the remarkable differences in the opinions of medical authors concerning mania, and the limited extent of my own experience in the disease, contribute equally to this. There is even something forbidding in the very nature of the subject. Conscious, as I am, that it ill becomes a physician to cherish in the exercise of his duties the refined and delicate feelings of his moral nature, it would yet be affectation in him to overlook the very peculiar character of this branch of his profession,—to reason concerning mental, with the same indifference as on bodily derangements; or, in investigating the nature of mania, to forget the melancholy spectacle of the maniac.

Theory of mania.—A great deal of metaphysical learning has been displayed in determining the precise nature of maniacal aberration,—in other words, in developing the theory of diseased ideas. The object has been to frame from this, some definition of mania which may apply to all cases of the disease, and afford to the medical practitioner a certain criterion, by which to determine when a man is actually deranged, and to distinguish between insanity, and mere singularity of manner, or waywardness of temper.

The difficulty of effecting this is greater than might at first sight be apprehended. One class of nosologists define mania to consist in some error of the judging or reasoning faculty. Mr. Locke characterizes madness as a disordered state of the association of ideas. Dr. Cullen, who supports this theory, once said that false judgments of the relations of things constitute mania. This view of the subject, however, is in opposition to a principle generally admitted, that madmen reason correctly from erroneous premises; and moreover it draws no sufficient line of distinction between the insane, and those who are merely foolish, or capricious.

Dissatisfied with this definition, Dr. Cullen subsequently stated it as his opinion, that the diseased judgments of the insane were such as produced *disproportionate emotions*. It is questionable how far this addition has increased our just notions of the disease. The emotions of a lunatic are, indeed, often vehement and forcibly expressed; but they are probably in due proportion to the impressions from which they take their rise.

Another class of pathologists, therefore, in attempting to establish the nature of madness, exclude all reference to the state of the reasoning faculty, as well as all notion of a primary derangement of the emotions or passions, and consider mania as consisting in *diseased perceptions;* the mistaking one man for another, a chair for a throne, a walking-stick for a sceptre.

That such false perceptions do occur among maniacs there can be no dispute; but it may reasonably be doubted whether they are the *essential* circumstances of madness. Many insane persons have the power of perception in a very complete degree; and false or *mistaken* perceptions are among the ordinary occurrences of common life.

Dr. Prichard and others take a somewhat different view of the subject,—maintaining that the habit which characterizes the lunatic, is that of confounding the results of imagination and memory, and mistaking the ideas of reverie for the impressions of attentive and active reflection. This is doubtless a correct and scientific explanation of a very large proportion of maniacal aberrations; but whether it includes them all, is a point on which pathologists continue to differ.

From the diversity of views which have thus been taken of the precise condition of mind which constitutes insanity, we may, I imagine, deduce some very important conclusions:—1st. That all the faculties of the mind are capable of being affected in the maniacal state, though not always equally, or at one and the same time. 2dly. That it is hardly possible to express in words the nice distinctions that mark the boundaries of reason and insanity, or to specify the delicate gradations by which weakness of intellect, depression of spirits, violence of temper, and eccentricity of manner, degenerate into actual disease. 3dly. That in determining the question of insanity or lunacy, the common sense of mankind must ultimately be relied on; and that its decision can receive little or no assistance from metaphysical speculations.

Phenomena of mania.—Passing from these abstruse points, I proceed to give a brief sketch of the origin and progress of the disease. The manner in which it makes its approach is considerably diversified. In some instances the attack is sudden and violent, and perfectly unexpected; but in others, and probably in a much larger proportion of cases, the advances of the complaint are *gradual.* A certain oddity of manner has been manifest in the individual, perhaps for years; he has exhibited very high or unusually low spirits, been fretful and irascible on slight occasions, distrustful of his friends, easily intoxicated, and strongly affected by every emotion or passion of the mind. The increase of these has prepared the friends of the patient for the complete development of maniacal symptoms.

In the onset of the disease there is generally considerable disorder of the whole system; much febrile excitement, loss of appetite, a costive state of the bowels, excessive restlessness. There are present also, very decided evidences of unusual determination of blood to the head; flushing of the face, redness of the conjunctiva, contracted pupils, and headache. The ideas of the patient are often more incoherent at the commencement of madness than at a more advanced period. As the general excitement of the body lessens, they acquire a greater degree of consistency, occurring in trains more evidently connected, though still retaining the true maniacal character. The patient will now answer questions, but his replies are vague and unmeaning. Sometimes his delusions extend to a great variety of subjects. At other times the maniacal aberration is confined to a single topic, constituting what writers have called *monomania.*

In this state the maniac remains for a considerable time, the disease very seldom yielding speedily, or proving immediately fatal. He relapses, perhaps, occasionally into his prior state of complete incoherence, or exhibits the cheering prospect of a *lucid interval.* By degrees his ideas become more settled, until either the morbid impressions altogether disappear, or they remain so indelibly fixed, that he sinks into the condition of a confirmed and incurable lunatic. In its further progress the disease becomes frequently complicated with epilepsy or palsy. After a lapse of some years, the patient dies, and for the most part in a comatose state. When the excitement is violent, and the paroxysms of great length, the patient is sometimes carried off early in the disease, unexpectedly.*

There is a proportion of the insane who can only be restored to a *certain degree* of sanity. While kept quiet and unexposed to any source of irritation, they enjoy a considerable share of rationality and tranquillity. Retaining, however, a morbid susceptibility of all the causes which produce the disease, they are incapable of again mixing with the world without the risk of the total abolition of reason.

Varieties of mania.—From the earliest periods attention was directed, both by the profession and by mankind generally, to the varieties in the maniacal character; and much importance has always been attached to them. Maniacal aberration exhibits itself under the three great forms of the furious, the gloomy, and the idiotic; which latter may be either adventitious or congenite. These distinctions correspond with the mania, melancholia, amentia, and fatuitas of nosologists. Although a *popular* subdivision of the complaint, it is certainly superior to that which the old pathological writers chiefly dwelt upon. By them the *extent* of maniacal aberration was assumed as the distinctive character of the species; and the term *melancholia* was made to bear a reference, not to the concomitant dejection and despondency, but to the *limitation* of the diseased condition of mind to a few objects or trains of ideas, such as religion, or love. This, however, appears to be a matter of trifling importance, whether in relation to pathology, prognosis, or practice, and is now in a great measure disregarded. The nymphomania and satyriasis of nosologists are modifications of insanity, constituting the *erotic monomania* of some modern authors.

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* For a fuller detail of the history of mania, the reader is referred to Dr. Pril's excellent work on the "Diseases of the Nervous System," p. 113.

A detail of the most striking peculiarities in each of these principal forms of insanity would afford ample scope for the display of eloquence, and might prove interesting to the man of feeling, and perhaps useful to the cultivator of intellectual philosophy. To the student of physic, however, it would be of little value, and this consideration deters me from attempting even a faint sketch of it. To him the most interesting subject which the investigation of mania presents is that of *prognosis*, which within the last few years has been prosecuted with uncommon zeal, and has led to results which neither the physician nor the philanthropist can contemplate without much gratification.

Prognosis.—It has been satisfactorily proved, in the first place, that mania does admit of cure; and, provided the disease be brought under treatment at an early period, in a very large proportion of cases. It has been shown, secondly, that a mild and humane system of management is that under which the greatest number of cures has been effected; and that the ultimate good of the lunatic can never be brought forward to cloak the carelessness or ill temper of the attendants. But it is sufficient to examine the reports of any of the great receptacles for lunatics in this country, to be sensible that mania, though curable, is not so in the same degree with many other chronic diseases.

In estimating the probability of *permanent* recovery, many minute circumstances must be taken into consideration; but we are never to lose sight of the strong tendency which this disease shows to *relapse*, and to rivet itself in the constitution by frequent recurrence. The particular prognosis, or those minute shades of distinction which give us more or less hopes in individual cases, may be comprised under the following heads:—Insane persons recover in proportion to their youth. The chance of recovery diminishes with the length of time that the disorder has continued. Patients who are in a furious state recover in a larger proportion than those who are depressed or fatuous. Mania connected with palsy or epilepsy is quite hopeless. Mania from physical causes is more likely to be permanently cured than when it arises from mental or moral causes. Puerperal mania is that species of the disease from which *perfect* recovery has taken place in the largest proportion of cases. Insanity is more or less susceptible of cure according as it arises from causes purely *accidental*, or is connected with a greater or less strength of family predisposition.

Morbid anatomy.—Much discussion has arisen respecting the morbid appearances observable in those who die maniacal. It has been contended by some, that the brain exhibits certain distinctive characters in all, or almost all cases of mania; and a peculiar *hardness* of the substance of the brain has usually been regarded as the *common* phenomenon. By others, this is not only denied, but it is actually maintained, on the authority of numerous and accurate dissections, that no alteration whatever from the healthy structure is discernible in the heads of the insane. The truth will be found to lie between these extremes. Morbid appearances are indeed observed, but they are in no wise different from such as present themselves in many other forms of encephalic disease, or even in common fevers—serous effusion, for instance, thickening of the membranes, turgescence of vessels. The notion of the maniacal state being intimately connected with preternatural hardness of the brain is now abandoned.

Predisposition.—In entering on the consideration of the *causes* of mania, attention must first be directed to the important influence of hereditary predisposition. It is the most strongly marked and melancholy proof which we have of the reality of such a predisposing cause of disease. The influence is of course the stronger when it occurs on the side of both parents. Struck by its extent and force, some pathologists have even questioned the possibility of mania existing without it, and have alleged, that no combination of circumstances, however powerful, can, *per se,* bring on the maniacal state. The phenomena of febrile delirium, however, are strongly in favour of the presumption, that mania is sometimes *acquired.* The instances which appear most unequivocally to prove such a principle in pathology occur in the case of puerperal insanity; and doubtless to this circumstance is mainly to be attributed the greater proportion of recoveries which distinguish this class of maniacal patients.

A predisposition to insanity is also given by the advanced period of life. As a disease of youth, mania is hardly known. Seldom is it observed before the twentieth year, and it increases in frequency until the fiftieth year of life. The greater number of maniacal patients have their first attack between the ages of thirty and forty. The female sex has been considered by some as more especially prone to mania, but the disproportion is not very great, and if puerperal insanity is kept out of view, hardly discernible.

Exciting causes.—The circumstances that more immediately induce the maniacal paroxysm are often obscure, the most accurate inquiries exposing nothing that could have contributed to the event; but at other times it is observed to follow certain physical conditions of the body, and affections of the mind, which it may be useful to investigate.

1. Injuries of the head have sometimes brought on mania. A constant habit of intoxication is that which chiefly operates as the cause of insanity among the lower classes in this country. Such a result cannot surprise us when we reflect what intoxication is, how nearly it resembles mania, and how seriously the frequent indulgence of it must injure the vessels of the brain. I have already alluded to the numerous instances which occur of insanity succeeding parturition. Women of sanguine temperament are chiefly observed to suffer in this manner, but it is not peculiar to such habits; and, altogether there is considerable difficulty in accounting satisfactorily for puerperal insanity. Maniacal affections are connected also in other modes with the uterine functions. Irregularity of menstruation, which in many young women induces symptoms of hysteria, becomes in

others the prelude to a maniacal attack. Mania has been attributed in some instances, but perhaps upon insufficient grounds, to *metastasis*—as when it succeeds repelled eruptions, or the healing up of old ulcers.

2. The mind is a powerful agent in the production of *bodily* disease. We cannot be surprised, therefore, at its proving so frequently the origin of maniacal disorder. Of the several emotions of mind, the uncontrolled indulgence of which has brought on insanity, the most common are, superstitious dread, religious fanaticism, intense grief, especially when arising from domestic calamity, and the despondency of a hopeless passion. Poets are fond of representing these as the sources of mental derangement, and there is much less of fiction here than in other exercises of their genius. Lastly, mania has often been traced (particularly in commercial countries) to the constant anxiety of mind connected with an extensive trade and hazardous speculations. With a view to practice, it is very important to bear in mind, that in maniacal cases most obviously arising from these and similar violent emotions and passions, there will often be found considerable disorder of the abdominal functions. Whether this is to be regarded in the light of cause or effect may be a matter of dispute, but it is generally acknowledged that such cases admit of relief by remedies acting through the medium of the stomach.

Proximate cause.—Of the actual state of the brain in mania we have no certain knowledge. It is reasonable to presume that in some cases there is *congestion*, or perhaps a peculiar kind or modification of *inflammation*, going on there. Many of the occasional causes of the disease, some of its preceding and concomitant symptoms, its connection with other diseases, the mode by which it proves fatal, and occasionally the appearances found on dissection, correspond perfectly with that notion. We are led to the same opinion by considering the recorded good effects in mania of such measures as are commonly resorted to in encephalic inflammation, compared with the inefficacy of all others.

There are a variety of facts, however, connected with the history of mania, quite inexplicable on such a principle; as, for instance, an hereditary predisposition to the disease, and its recurrence at irregular periods from slight and inadequate causes. From these it is to be inferred, that mania is often produced by a morbid condition of the brain, unappreciable by the anatomist, and altogether different from those visible, tangible, organic affections, which are the consequences of disturbed circulation within the cranium. Judging from the well-known fact, that mania seldom appears in early life, often not until a good old age; that it becomes more obstinate as the patient grows older; and that a modification of mental derangement (imbecility) often comes on in extreme old age, we must infer, that the changes, which the structure of the brain undergoes in the progress of life, tend to increase that peculiar condition of it, with which maniacal aberration is connected.

Moral management of the insane.—The treatment of mania is usually discussed under the two heads of moral and medical, and both have been much improved of late years; the former being more thoroughly investigated, and raised in importance; the other simplified and regulated by more accurate principles. I begin with the consideration of the moral management of the insane; it being now unreservedly admitted, that on it depends mainly the successful issue of the case. Under this head are included, in public institutions, the classification of patients; in all situations, the conduct and tone of the medical practitioner and of the attendants towards the patient; the employment of restraint and coercive measures; the question of estrangement from friends, and of solitary confinement; the establishment of a system of regularity in all the actions of the lunatic; the occupation of his mind, religious instruction, amusements; manual employments, exercise; the regulation of diet and regimen; and the change of scene and association.

A few cursory observations on the principal topics here suggested will be sufficient to point out the spirit and scope of that system of moral management which is now generally adopted in this country. Firmness on the part of the attendants sufficient to ensure obedience is found not incompatible with those conciliatory manners which so commonly win the good will of the patient, and rouse him from the sullen humours in which he is prone to indulge. The employment of severe bodily restraint is hardly ever resorted to in the best regulated modern madhouses. It creates a degree of irritation of mind which impedes advancement, and is at variance with that soothing and encouraging tone and manner so necessary to ultimate success. In many cases nothing contributes so essentially to the cure, as withdrawing the mind as much as possible from former scenes and earlier associations. To effect this, the total exclusion of friends, and a complete change of scene and habits, are often found to be measures of indispensable necessity. Amusements of various kinds, that engage attention, and promote exercise in the open air, without rousing the passions or producing fatigue, should in every way be encouraged. The diet should be simple, and at the same time nourishing—such as may support the system, without *heating* it. Regular hours of meals, exercise, and sleep, should be strictly enforced.

Medical treatment.—The medical treatment of insanity was at one time conducted in the most indiscriminate manner, having no reference to the peculiar habits of the patient, the immediate exciting causes of the disease, or the character of the concomitant symptoms. Such an opprobrium is no longer chargeable against those who have the professional care of lunatics. It is now well understood, that though medicines are of comparatively little service in the relief of mania, yet when necessary, their administration is to be suited to the complexion of each case, and regulated by the ordinary principles of pathology. The following suggestions may assist the student in determining the plan of medical treatment best adapted to the particular state and stage of mania, in which his assistance may be required.

The medical treatment of insanity can alone be entered upon with a reasonable prospect of advantage, at an early period of the disease. It cannot legitimately be employed with any other object than that of relieving the constitutional disturbances with which maniacal aberration is occasionally complicated. When these have ceased, our hopes of success must rest in time, the effects of nature, and moral management.

Blood-letting.—When insanity first developes itself in a young and plethoric person, it is not uncommonly accompanied with the ordinary marks of phrenitic inflammation; and here blood-letting is often resorted to with very beneficial effects. I am well aware, that among those whose attention is exclusively directed to maniacal disorders, a general belief prevails, that excessive blood-letting rivets the disease, and that the great object of the practitioner should be to support the patient's strength. Acknowledging the correctness of this principle, there are still considerations of great weight to which at times it must necessarily yield. The nature of the exciting cause, for instance, cannot be overlooked in determining the plan of treatment. Where mania is traceable to excessive intoxication, blood-letting, even to a considerable extent, is often required, and for the most part is borne well. The temperament and general habits of the patient are equally to be consulted. Whatever may be thought of general blood-letting, the benefits of *local* blood-letting (whether by leeches or cupping) are now fully appreciated in all our best establishments for the insane.

Purgatives.—One of the earliest means of relief in mania which history has recorded, is the free administration of purgative medicines. There are few who can be ignorant of the presumed virtues of hellebore in this disease; and though the medicine has sunk in common estimation, the principle upon which it was resorted to is still acknowledged as correct. A disordered state of the alimentary canal is a frequent concomitant of maniacal aberration. So strongly is this marked in certain cases, that pathologists have described one variety of the disease under the title of *enteric mania*. It is characterized by obstinate constipation (the evacuations when procured exhibiting a most unhealthy aspect), a viscid secretion into the mouth, a failing or depraved appetite, coldness of the skin, scanty and high-coloured urine, a rapid irritable pulse, and restless nights. In this state of disease the use of purgative medicines is to be long and patiently continued.*

The high degree of nervous irritation present in mania has induced physicians, in all ages, to expect relief from narcotic medicines, and most of them have been fully and fairly tried. Those which have obtained the highest repute are opium, hyoscyamus, and camphor; but upon the whole, little reliance can be placed upon them. The concurrent testimony of several intelligent men has stamped the warm bath as a remedy of general and undoubted efficacy in the treatment of insanity. It has been found particularly serviceable in cases of uterine or puerperal mania. The cold bath, or bath of surprise, is mentioned in terms of at least equal commendation by others; but its administration requires to be regulated with a degree of nicety which few can pretend to, who have not enjoyed extensive opportunities of observation.

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* Consult Dr. Edward Percival's "Report on the Morbid Conditions of the Abdominal Viscera in some Varieties of Maniacal Disease, with the Methods of Treatment."—*Dublin Hospital Reports*, vol. i.

Recent inquiries* have satisfactorily shown, that mania, so far from being, as was once apprehended, an increasing malady in this country, is in reality less frequent than formerly; and it is not unreasonable to suppose, that this may have in some measure been the result of those improvements in the medical treatment and moral discipline of the insane, which it is for the honour of the present age to have introduced.

CHAP. VI.

CHOREA.

Literary Notices concerning Chorea. Symptoms and Progress of the Disease. Prognosis. Predisposition. Pathology. Method of Cure. Comparative Efficacy of the purgative and tonic Systems of Treatment. Influence of Arsenic.

CHOREA, commonly known by the name of St. Vitus's dance, received but little notice from the early systematic and practical writers in medicine. This neglect, however, it shared with many other diseases of early life, croup, hooping cough, hydrocephalus, marasmus. It is highly creditable to the pathologists of recent times, that they have extended an equal share of their attention to every form of human suffering, and laboured assiduously in that field which their predecessors had unjustly deserted. From such censure the illustrious Sydenham is, for the honour of this country, exempt. His description of chorea is accurate and spirited, and has served as a model for every succeeding author. No improvement upon it appears to have been made for a long series of years, nor did it again become an object of specific investigation until 1805, when Dr. Hamilton of Edinburgh turned his attention to the complaint, in the course of his inquiries into the utility and administration of purgative medicines. The account of chorea to be found in the useful work of that author* is by far the most precise and complete which has appeared, and leaves me no other task than that of brief analysis.

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* See Burrows's "Inquiry relative to Insanity." London, 1820, page 106.

Symptoms.—Chorea usually makes its first attack between the eighth and the fourteenth year of life. Dr. Hamilton mentions having seen the complaint originate between the ages of sixteen and eighteen; and I once saw it, in a very perfect form, in a young woman nineteen years of age. Its approaches are commonly slow. An awkward dragging of the leg, twitches of the muscles of the face, and unsteadiness of the fingers, precede the more general convulsive motions which characterize the confirmed state of the disease. In some cases the convulsive motions are confined exclusively to one side of the body. The chorea approximates in its character to palsy.

The contortions and gesticulations of the patient render him a singular but painful object of observation. All the muscles of voluntary motion are at different times and in different instances affected. Those of the face, neck, and extremities more particularly suffer. The hands and arms are in constant motion. He can grasp no object, even with the strongest exertions of his will; he walks unsteadily; but with all this, there is no symptom of pain or uneasiness. The expression of countenance, though grotesque, is, in the early stage of the disease, that of good humour and contentment.

The convulsive agitations vary in violence, and are subject to occasional exacerbations. During sleep (unless in very bad cases) they cease altogether. As the complaint advances, articulation becomes impeded, and is very often completely suspended. Deglutition also is occasionally performed with difficulty. The pulse is frequent, and small. The eye loses its lustre and intelligence. The face is thin and pale, and expressive of a languor and vacancy, which in severe and protracted cases approach nearly to fatuity. The mind, indeed, partakes in some instances of the bodily disorder, and the mental faculties retrograde to those of infancy.

With these evidences of disturbance of the cerebral functions are usually united very unequivocal marks of a deranged condition of the stomach and bowels. A variable and often ravenous appetite, a swelling and hardness, or sometimes flabbiness of the abdomen, with constipation, accompany in a large proportion of cases the onset of the disease. In its advanced periods we may observe impaired digestion, a very offensive state of the alvine evacuations, and flaccidity and wasting of the muscles throughout the body.

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* Observations on the Utility and Administration of purgative Medicines in several Diseases. By James Hamilton, M.D. Sixth Edition. Edinburgh, 1818. Chap. x. page 134. Chorea.

Chorea has always been found a tedious complaint. The most experienced practitioners admit, that, under the best regulated system of treatment, it often continues for several months; and many instances are recorded of its terminating only after a lapse of some years. Occasionally we meet with adults affected with convulsive twitchings of the face and arm, originating in early life, and of a nature closely allied to, if not identical with, chorea. They often exist, however, with acuteness of intellect, and a perfect state of all the functions, and are viewed rather as peculiarities of habit than as actual disease.

Prognosis.—Chorea is not a dangerous malady. In the few cases which have been recorded of fatal termination, its character had merged in that of epilepsy, and it had probably become complicated with organic læsion of some structure within the cranium. It is a very important but well-ascertained feature of the disease, that it admits of a natural cure. I have seen a variety of cases of genuine chorea, which were never subjected to any kind of medical treatment, which gradually yielded in the course of three or four months. The same principle is more generally known as applicable to hooping-cough; and it is interesting in this manner to trace the pathological relations of two diseases, which have little apparent connection with each other.

Experience has fully proved that much may be done by medicines to shorten the duration of this disorder; and the slightest reflection will convince us how requisite it is that they should be had recourse to early. While the disease lasts, an effectual check is put to the improvement of the youthful mind; and though the danger to life from it be but small, yet its continuance for any length of time is attended with the risk of permanent fatuity. The fact of its capability of a natural cure should only be so far impressed upon the physician as to make him distrustful of some of those medicines which have been brought forward too confidently for the certain removal of the disease.

It not unfrequently happens that chorea, after being to all appearance cured, returns, and perhaps with considerable violence. Still, surrounded as we are in this part of the work with diseases that almost preclude hope, it is consolatory to find one, which, in almost all instances, can be effectually and permanently checked.

Causes.—The causes of chorea are but little known, and that little is comprised under the head of *predisposition*. It attacks boys and girls indiscriminately, and those chiefly who are of a weak constitution, or whose natural health and vigour have been impaired by confinement, by employments unsuited to their years, or by the use of scanty or improper nourishment. The too rapid growth of the body has been considered, but perhaps unjustly, as leading occasionally to chorea. Some pathologists connect it with the second dentition.

The pathology of chorea closely assimilates itself to that of the other forms of convulsive affection. It appears to depend mainly upon the peculiar *irritability* or *mobility* of frame which distinguishes the infantile periods of life, and the constitution of the adult female; and which is opposed to the *vigour* of manhood, and the *torpor* of advanced life. That this is a principle of considerable importance in the pathology of chorea, there can, I presume, be no question. I have seen it in several instances occurring to females at the period of puberty, and not only accompanied by, but probably depending upon, the same habit of body that leads to amenorrhœa and chlorosis. Chorea, indeed, may, without much refinement, be characterized as the hysteria of an earlier age. Such an irritable state of body is very frequently associated with real *debility*, and therefore it is that we so commonly find chorea occurring in weakened and relaxed habits, and have so much reason to attribute it, as already stated, to scanty and improper diet. This debility or loss of tone in the general system constituted the leading principle in the pathology of chorea, according to the system of Cullen, and, indeed, all the professed systems of physic during the last century; and it naturally led to the exclusive employment of stimulant and tonic medicines in its cure.

In practice, however, it is highly necessary for the student to be aware, that the *irritable habit* of body is compatible with a state of muscular strength, and even of plethora; and that the convulsive motions, which are among its more obvious marks, originate in some source of *local* irritation. Dr. Hamilton was the first who formally applied this acknowledged principle to illustrate the pathology and direct the treatment of chorea. It was the chief design of his inquiry into the phenomena of this disease to show, that the debility and spasmodic motions, previously so much insisted on, were not its *leading* characters; but that they depended on an ulterior derangement of the stomach and bowels. Such a view of the nature of chorea has been gaining ground in this country since the publication of Dr. Hamilton's work; and though it would be contrary to all pathological analogy to expect, and to all observation to maintain, that it includes the whole theory of the disease, still it may fairly be assumed as a doctrine of very extensive application.

Treatment.—The general principles of treatment in chorea naturally flow from the considerations which I have now pressed upon the notice of the student. Medicines have been administered with three distinct objects, *viz.*—1. To remove the constipated state of the bowels, and regulate their functions. 2. To strengthen the general system. 3. To break in upon that disposition to habitual recurrence, which spasmodic actions, once excited, are so apt to leave. On each of these indications of cure, and the best means of fulfilling them, I shall, in conclusion, offer a few practical suggestions.

1. *Purgatives.*—The extensive experience of Dr. Hamilton in the administration of purgative medicines in chorea, qualifies him to become a most useful guide in this branch of medical practice. He informs us, that the quantity of fæculent matter collected in the bowels is, in many instances, enormous, and bears no proportion to the fulness and prominence of the abdomen. He imagines it to have a reference to the *duration* of the disease, and its natural consequence, the want of sensibility in the intestines. In the early stage of the complaint, while the bowels still retain their tone, and before the accumulation of fæces is great, gentle purgatives, repeated as occasion may require, will effect a cure, or rather prevent the full development of the symptoms. In the confirmed stage, cathartics of a more powerful kind are demanded; and to ensure success

they must be persevered in steadily, and with a confidence which can be derived only from a conviction of the true nature and causes of the disease.

Here, as in all other cases of extreme debility, the recovery is slow and gradual. A regular appetite for food, a more intelligent eye, and a returning playful temper, are the preludes to that cessation of inordinate movements in the muscles, which we are not to expect as the *sudden* reward of our exertions. The bowels must even continue an object of attention for a considerable time after a salutary change in their state has taken place. The occasional stimulus of a purgative will be necessary to support their regular action, and to provide a security against renewed accumulation, and consequent relapse.

In this disease, and indeed wherever a disturbed state of the natural functions constitutes a *primary* feature in pathology, it is indispensable that the practitioner should personally inspect the alvine evacuations. The attendants in a sick room are ignorant of the different principles upon which purgatives are administered, and incapable of forming an opinion as to the kind or degree of effect which is contemplated in each particular case. By personal inspection alone can the physician adequately judge of the effect of one dose, or speak with confidence of the necessity and extent of others. From the experience of Dr. Hamilton it would appear, that it is comparatively of little importance what purgative is administered, provided we assure ourselves that the desired effect has been fully procured.

Chorea is occasionally complicated with worms in the intestines. This is not to be considered as a *common*, far less as a necessary concomitant of the disease. It suggests the propriety of exhibiting, in suspected cases, the oil of turpentine, in the dose of four or six drachms.

2. *Tonics.*—It is not contended, however, by Dr. Hamilton, nor would it be consistent with common experience to maintain, that benefit may not also be derived from tonic medicines and a strengthening regimen. They restore energy to the torpid bowels, aid the operation of purgative medicines, and confirm recovery. Much may be done by light and nourishing food, and regular exercise in the open air. The cold bath, however, is generally acknowledged to be the most powerful strengthener

of the languid frame in chorea. When the system is duly prepared for it, by the previous administration of purgative medicines, the cold bath often acts like a charm.

Of the tonic *medicines* which have acquired a character in the cure of chorea, preparations of steel deserve especial notice. I have witnessed the best and most indisputable effects from a scruple of the ferrum ammoniatum, given three times a day. The oxyd of zinc, in doses of three grains, once enjoyed a high reputation, and it is reasonable to suppose that this was not obtained without some unequivocal proofs of success from its use. Cordial draughts, containing quinine or the subcarbonate of ammonia, with aromatic confection, may be given with advantage. Calumba, cascarilla, and other stomachic bitters are useful. The cardamine pratensis, in doses of a drachm every six hours, comes recommended to us on the authority of Sir George Baker. A moderate allowance of wine has proved, in numerous cases, highly beneficial. It may be remarked with regard to this, as to all other nervous diseases, that the tonic remedy precisely suited to each can only be determined by actual trial. One remedy will sometimes succeed, where all others have failed, without the reason being discoverable.

3. *Antispasmodics.*—Like many other kinds of convulsive disease (asthma for instance, or hooping-cough), chorea is often kept up in the system by a principle of *habit;* and in obstinate cases, which resist the plans of treatment now proposed, it becomes an object of importance to interrupt that chain of actions in the body which have been so long associated with convulsive movements of the limbs. With this intention physicians have frequently prescribed the several kinds of antispasmodic medicines; more particularly musk, assafœtida, opium, ether, and camphor.

4. *Arsenic.*—The only other drug which possesses any acknowledged influence in the cure of chorea is arsenic. Several cases illustrating this fact may be found recorded in the Medico-Chirurgical Transactions.* The medium dose for a child of ten years of age is five drops of the arsenical solution three times a day. Differences of opinion may exist as to the mode in which arsenic operates. If I might indulge a conjecture, I should be inclined to attribute the influence which it

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* Vols. iv. x. and xi.

undoubtedly possesses in chorea, to the same principle for which we have recourse to it in the treatment of ague. That principle I have already attempted to explain. It appears to produce some strong impression on the nervous system which interrupts the series of morbid actions going forward. Such a principle, indeed, is obscure; but there are strong grounds for believing it to have a real foundation in nature.

CHAP. VII.

TETANUS.

General Character of Tetanic Affections. Their Diversity of Origin. Tetanus, idiopathic, and traumatic. Symptoms and Progress of idiopathic Tetanus. Prognosis. Causes. Enumeration of the proposed plans of Treatment.

In the introduction to the first part of the work, an attempt was made to impress upon the student the impossibility of fixing, with any certainty, the boundaries of physic and surgery. Among acute diseases, the principle admits of a simple illustration in the phenomena of erysipelas. It is equally well exemplified among chronic diseases, in the history of that singular affection to which attention is next to be directed.

The nosological character of tetanus is derived from the presence of *tonic* or rigid spasm in the voluntary muscles of the body, more or less general. It is in this manner distinguished from those common forms of nervous affection, popularly called convulsions or fits, in which contraction and relaxation alternate in rapid succession. Tetanus, however, is characterized by the powers of sensation and thought remaining unimpaired; and in this respect also it is strongly contrasted with epilepsy.

Varieties of tetanic spasm.—Nosologists have been at pains to describe different *species* of tetanus. When the affection is confined to the muscles of the jaw and throat, it has been called trismus, or *locked jaw.* When the great extensor muscles of the back are principally implicated, by which the body is bent backwards into the form of an arch resting on the occiput and heels, the disease has received the name of *opisthotonos*. The term tetanus has been restricted to those cases in which the flexors and extensors being equally affected, the whole body is permanently rigid but straight. These distinctive appellations are so far useful as they express briefly the different *grades* of tetanic disorder; but the student will bear in mind that they are not to be received as indicating any difference in the *kind* of affection. To these acknowledged varieties in the character of tetanus, nosologists have added two others;—the emprosthotonos and the pleurosthotonos, the forward and the lateral tetanic curvature. The former is very rare; the latter is rather the offspring of fancy, than the result of accurate observations.

Other distinctions among tetanic cases have been noticed by authors, infinitely more important than those which have reference to the *seat* of spasm. The one is into the *acute* and *chronic*, according to the duration, and consequently the *intensity* of the disease. The other is into the *idiopathic* and *traumatic* tetanus; a division founded on that remarkable diversity in the *origin* of the complaint, which has been acknowledged from the earliest times. It must, indeed, ever be regarded as a very singular fact in pathology, than an affection of so peculiar a character as this should have its source in causes apparently so dissimilar;—that the puncture of a nerve, the laceration of a tendon, or an extensive burn, should bring on the same *kind* of nervous affection as that which is the occasional consequence of *cold*.

In the further remarks which I have to offer on the subject of tetanus, I shall principally have an eye to the *idiopathic* form of the disease, as being that to which the attention of the physician is principally called. The *phenomena* of the disease, however, from whatever cause arising, admit of very little variation. The exclusive view which is here contemplated will be principally apparent when the *treatment* of the affection comes under discussion.

Symptoms.—The approaches of the disorder are commonly gradual, and it slowly advances to its worst stage. One of the first symptoms of incipient tetanus is a sensation of stiffness about the neck, which, increasing by degrees, renders all motion of the head painful and difficult. The patient now experiences an uneasiness about the root of the tongue, which soon passes into difficult deglutition. The aversion to swallowing in this disease is often so great, that the patient refuses all nourishment, and the administration of remedies is rendered equally hopeless. The temporal and masseter muscles are at the same time affected, and the lower jaw being thereby firmly closed, the state of trismus becomes fully developed. In slight cases, the affection does not advance further; but this can rarely be anticipated. The tetanic disposition once formed, proceeds, with but few exceptions, to exhibit its deeper and more formidable shades of character.

One of the most constant and remarkable symptoms of confirmed tetanus, is a severe pain, referred to the bottom of the sternum, and darting from this point backward to the spine, evidently in the direction of the diaphragm. This *constrictive* pain is the precursor of more violent spasms of all the muscles of the neck and trunk. As these increase in force, the body is raised in the form of a bow; and thus it remains until the disease has reached its acme, when the flexors act so powerfully as to counterbalance the extensors, and to retain the body in a straight and immoveable position.

In this extreme period of the disorder, every muscle of voluntary motion becomes affected. The eyes are fixed in their sockets; the forehead is drawn into furrows; the whole countenance undergoes the most extraordinary change. The muscles both of the upper and lower extremities partake of the general spasm and stiffness. Those of the abdomen are strongly contracted, and the belly feels hard and tense as a board. At length a violent convulsion puts an end to the life and sufferings of the patient. These sufferings are usually greater than it is possible for words to express. Their continuance, even during the ordinary period of the disease, would hardly be compatible with life, but for the occasional *remissions*, which, in common with the spasms, they undergo.* The muscular relaxation, however, is trifling, and the intervals of ease but momentary. The recurrence of aggravated spasm frequently happens without any assignable cause. Sometimes it is determined by the efforts of the patient to swallow, speak, or change his posture.

When the spasms are general and violent, the pulse is contracted, hurried, and irregular. The respiration, too, is similarly affected; but, during a remission, both usually return to their ordinary states; and feverish symptoms are rarely met with, even in idiopathic tetanus. The same remarkable freedom from disease characterizes the natural functions. The appetite not unfrequently remains good throughout the whole course of the disorder. The tongue is clean and the skin moist in an early period of the disease. As it advances, however, a cold sweat covers the surface; and obstinate constipation of the bowels succeeds, requiring the most drastic purgatives. The mental faculties are sometimes preserved entire even to the last. Delirium happily comes on in other cases.

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* Sir Gilbert Blane has recorded one very uncommon case of tetanus, in which the spasms were accompanied with a tingling sensation, rather agreeable than distressing. The case terminated fatally, but to the last no pain was experienced.

Prognosis.—The duration of these distressing symptoms is various. Dr. Wells records a case which proved fatal in twenty-four hours. The usual termination of the disease may be stated to occur on the third or fourth day; and it is rarely protracted beyond the eighth. I need hardly add how very large is the proportion of tetanic cases which end unfavourably. It is not improbable that the immediate cause of death may be the implication of the heart itself in the general spasm of the body. In a few instances the patient appears to die as if exhausted by the continuance of excruciating pain.

It is a gratifying reflection, that occasionally, even where the disease has been most fully developed, the event is favourable. In such cases the decline of the symptoms is gradual, and the patient long continues in a state of extreme weakness, suffering at the same time very acute pain in those muscles which had been chiefly affected during the height of the disorder. The chronic form of tetanus is of a much milder character. It has been known to continue for five weeks, though it seldom exceeds three. Tetanus of the idiopathic kind has certainly been cured in a larger proportion of cases than that which follows external injury.

Morbid anatomy.—In neither form of the complaint has dissection thrown any light upon its nature or proximate cause. In many cases no morbid appearances of any kind are discoverable. Sometimes slight effusions are found within the cranium, and occasionally, but not uniformly, an appearance of redness is to be met with about the œsophagus and cardiac portion of the stomach. Traces of diseases in the theca vertebralis have also been recorded, but they are not sufficiently uniform to authorize our attaching any degree of pathological importance to them. The body, after death, has been observed to be very prone to putrefaction.

Causes.—The only known sources of idiopathic tetanus, are cold, and disordered states of the primæ viæ. To generate this form of disease, however, it would appear that a certain *predisposition* is also requisite, and it is doubtless the same with that which operates as an *accessory cause* of the traumatic tetanus. The predisposition to tetanic affections is given, in the first place, by warm climates and warm seasons. Within the tropics, therefore, it prevails to an extent unheard of in colder latitudes. Secondly, tetanus is chiefly observed to prevail when the atmosphere is much loaded with moisture, and particularly where this has suddenly succeeded to a long course of dry and sultry weather. Even in this country, exposure to the cold and damp air of the night has occasionally been followed by an attack of tetanus.

In hot climates the ravages of the disease extend to all classes of persons. Infants, a few days after their birth, are frequently the subjects of it. The male sex more commonly suffer than the female; and of the former, the robust and vigorous more than the weak and irritable. Tetanus from cold occurs for the most part within three or four days after exposure to the exciting cause. Tetanus from an injury generally comes on about the eighth day. It is remarked by Sir James M'Grigor,* that if it does not occur for twenty-two days from the date of the wound, the patient is safe from its attack.

Treatment.—Among the questions of greatest interest which the investigation of tetanus presents, are those which relate to the *kind* of wound which is most commonly succeeded by tetanic symptoms, and to the *local* means of prevention and relief. But these are points which belong exclusively to surgery. I therefore omit them, and hasten to the enumeration of the several plans of *constitutional* treatment which have been proposed for this most painful and fatal disorder. Their variety must naturally perplex the student, more especially when he discovers them to be of the most opposite characters, and that, while each has occasionally succeeded, it has still more frequently failed.

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* Medico-Chirurgical Transactions, vol. vi. p. 449.

Reflecting upon the obscurity which involves the proximate cause of tetanic affections, we need not wonder that the practice in them should still be almost empirical. Ignorant of the very elements of their pathology, it cannot be expected that theory should assist us; and though the most extended trials have been made, experiment has hitherto completely failed in unfolding the secret of their cure. We have no reason, however, to consider tetanus as beyond the reach of medical art. It is our duty, therefore, to persevere in our efforts; and till a brighter epoch arrives, to employ diligently those means of relief which have hitherto been attended with the greatest degree of *comparative* success.

1. Opium is the remedy on which we are to place our chief, if not our only reliance. To give it a fair chance of success, we must begin its use from the earliest appearance of tetanic symptoms. It must be given in very large doses; and these doses must be repeated at such short intervals as to keep the system constantly under the influence of the remedy. It is astonishing to observe how the body, when labouring under a tetanic disease, will resist the operation of this and other remedies, which, in its healthy state, would have been more than sufficient to overpower and destroy it. It is advisable to begin with fifty drops of laudanum, and to repeat this at intervals of two or three hours, or even oftener, if the urgency of the symptoms requires it, until some effect has been produced on the spasms. In the early stage of the disease, we are to bear in mind the approaching closure of the jaw and difficulty of deglutition; and our remedies are to be pushed before such serious obstacles to their administration arise. Where they have occurred, and are found insuperable, opiate enemata and frictions may be tried; but we must not anticipate much benefit from such feeble means.

2. Purgatives claim the next place. Sir James M'Grigor informs us, that the operation of calomel on the bowels was always useful, and singularly so in the mild form of tetanus, distinguished by the spasms coming on *slowly*, and continuing of the *same* violence. A rigid perseverance in the exhibition of purgatives (wherever practicable) is therefore to be advised.

3. Of the remedies which have been employed for the cure of tetanus, none have acquired a higher degree of credit than

the cold bath. Dr. Wright has detailed[*] several cases, both of idiopathic and traumatic tetanus, occurring in hot climates, in which it was attended with complete success. Later experience, however, has shown, that in tetanus from wounds it is of little or no avail.

The other plans of constitutional treatment which have been devised for the relief of tetanus, may be discussed in a few words. The warm bath is now generally abandoned, after the most satisfactory proof of its inefficacy. Bleeding is equally to be condemned. The employment of wine, bark, and aromatic cordials, comes recommended to us on the strong authority of successful experience. Camphor, musk, and other antispasmodics deserve a trial. Tobacco enemata have acquired some reputation. Mercury has been proved, by adequate observation, to be totally inert.

CHAP. VIII.

HYDROPHOBIA.

Origin of Hydrophobia. Its pathological relation to Tetanus. Mode of its communication from Animals to Man. Detail of Symptoms. General Character of the Affection. Prognosis. Dissections. Failure of all attempts to cure the Disease.

THIS disease is considered by all pathologists as the consequence of a morbid poison, introduced into the system by the bite of a rabid animal. The general features of the disorder correspond perfectly with such a notion; but it is not to be overlooked, that a strong analogy exists between hydrophobia and tetanus, and that the former might, with no inconsiderable claim to pathological accuracy, be viewed as a kind of tetanic affection, supervening upon wounds of a particular character. The points of analogy between these diseases will be found in the character and course of the symptoms; but previously it is necessary to notice an important *distinction* that exists between them. Idiopathic tetanus is both a frequent and a very fatal disease. Idiopathic or spontaneous hydrophobia has

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[*] See Medical Observations and Enquiries, vol. vi.

never been known to occur in the human subject,—never at least under such circumstances as to remove all suspicion of preceding local injury.

Hydrophobia has certainly existed from a very early period of the world. The first allusion to it is to be found in the writings of Aristotle; but it is to Cælius Aurelianus that we are indebted for the original description of the symptoms and progress of the disease. From his time, unceasing attention has been paid to every phenomenon which it presents, and nothing is wanting, which observation can supply, to perfect our knowledge of it. Like tetanus, however, its cure has hitherto equally evaded the suggestions of pathology, and the blind attempts of empiricism. The investigation of the disease, therefore, must be conducted with a view to elucidate its peculiarities and pathological affinities, without any prospect of practical advantage.

Origin.—From the most distant times inquiries have been directed to ascertain what animals are capable of originating, receiving, and propagating hydrophobia, and what is the precise mode of its communication from animals to man. The opinions of authors on these subjects have been mixed up with many idle tales, but the following may be taken as a summary of the best established results to which their researches have led. The disease almost always commences among animals of the canine race. It is questionable how far it ever originates even in those of the cat kind. To them, however, it is readily *propagated*, and they possess, equally with dogs, the power of transmitting it to man, and to every species of quadruped.* It is a matter of doubt, whether birds are susceptible of the disease. Herbivorous animals appear incapable of communicating it, and this is even still better ascertained with regard to man. Innumerable attempts have been made to propagate the disease by inoculating animals with the saliva of persons labouring under hydrophobia, but they have always failed.

Of the causes of this peculiar distemper in dogs nothing certain is known. That it originates *spontaneously* in them is now the general opinion; but it is equally well ascertained that among them it chiefly spreads by inoculation. In respect to the mode of its communication from animals to man, the facts in proof of the reality of a peculiar infectious principle are too numerous to admit of dispute. It is universally allowed, that the poison cannot operate on the sound skin. In many instances the wound has been so slight as to escape notice; but it may be stated as an invariable law, that for the hydrophobic virus to take effect, it must be applied to an abraded, wounded, or ulcerated surface.

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* A well-marked case of hydrophobia from the bite of a rabid cat is to be found in the London Medical Gazette, vol. i. p. 517.

A question has arisen, whether the infectious principle resides in the salivary secretion, or in the mucus of the trachea and bronchia. Some have conjectured, that it is more or less diffused through all the solids and fluids of the rabid animal. This latter suggestion may at once be set aside; but the former opens a curious subject of inquiry. The appearances of inflammation so common about the pharynx, render it by no means improbable that the mucous secretion of that part may undergo a change, by which it is enabled to propagate the disease.

There is some difficulty in ascertaining how it happens, that of a number of persons bitten by a rabid animal, a certain proportion only are subsequently attacked by hydrophobia. The influence of prophylactic measures may be altogether excluded, and differences of constitutional disposition can hardly be trusted to. The circumstance is probably referrible to the ineffectual application of the poison in the cases that escape. This conjecture is rendered the more probable by the acknowledged fact of bites upon the face and hands being always more dangerous than where the tooth had previously passed through cloth or leather.

Hydrophobia, as it affects dogs and other animals, exhibits a very different train of symptoms from that which is observed when man is the subject of the disease. For the former I beg to refer to a very ingenious paper by Mr. Meynell;* the latter I shall now proceed to describe, partly from my own observation, and partly from the very admirable memoir on hydrophobia, published by Dr. John Hunter.†

Incubation of the virus.—The interval between the bite and the development of hydrophobic symptoms (in other words, the *period of incubation* of the virus), is subject to considerable variation. Among the *genuine* cases which I have seen recorded, the shortest period was twenty-one days; and the longest nine months. From thirty to sixty days usually elapse. Forty days, or six weeks, may be stated as the average; after which time the chances of escape are greatly increased. It is a curious circumstance, that during all this time there is no local irritation observable in the bitten part, nor any derangement of general health, or perceptible change in the constitution, provided the person bitten be not under the influence of fear.

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* Duncan's Medical Commentaries, vol. xix. p. 90.

† Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. i. art. 17.

Symptoms.—For two or three days previous to the coming on of the more unequivocal symptoms of the disease, the patient often complains of chilliness, some degree of head-ache, languor and lassitude, low spirits, and restlessness. Frequently also a sense of coldness and numbness is experienced in the bitten part, occasionally amounting to actual pain. This, in some instances, extends up the limb, and it has been observed to follow the course of the nerves rather than that of the absorbents. The freedom of the lymphatic glands from disease, indeed, has often been noticed, and adduced as an argument that the disorder does not depend on the absorption of any virus.

The second or *confirmed* stage of hydrophobia commences with that symptom which gives name to the disease—the horror of liquids. The distressing sense of suffocation, and the violent spasmodic agitation of the whole body, brought on by the sight of liquids, or the attempt to drink, is unquestionably the most remarkable symptom of the disorder. By degrees the disposition to spasm increases so much upon the patient, that not merely the sight of water, but the least exertion of speaking or moving, the slightest noise, or the entrance of a stranger into the room, brings it on. Extreme irritability and sensibility of the whole frame are apparent indeed in every action of the patient, and constitute the unvarying feature of the complaint.

It has been erroneously imagined from the very general use of the term *canine madness*, that delirium was one of its usual symptoms. In a large proportion of hydrophobic cases the mind has continued perfectly clear up to the last moment. In others, where delirium did occur, it was not until a late period of the disease. But though the patient is sensible, he is in the highest degree timid and *nervous*. As the disease advances, the mind is more and more filled with dreadful fears and apprehensions. Excessive anxiety is apparent in the countenance. Almost immediately after the disorder distinctly manifests itself, the respiration is hurried and *gasping*, and the patient commonly complains of an oppression about the præcordia. The pulse is seldom much affected till towards the latter periods of its course, when it becomes small, irregular, feeble, and rapid. Blood has frequently been drawn from the arm; but it has never, I believe, been observed to exhibit any inflammatory crust.

The secretions about the mouth are always very much affected. The saliva is usually viscid, and increased in quantity. The patient complains of a parched mouth and thirst, on which account he continually calls out for drink, which yet no persuasions can induce him to look at, much less to swallow. A frothy saliva is frequently ejected, to the great terror of bystanders; but it arises merely from the patient's inability to swallow.

Hydrophobia is not characterized by any great degree of debility: instances have occurred of persons running a considerable distance, and making great muscular exertion, within a few hours of their death. The degree of bodily weakness which has been observed in particular cases, is perhaps as much attributable to the remedies employed, as to the natural effects of the disorder. Its duration varies from two to five days, reckoning from the invasion of the *pathognomonic* symptom. The average does not appear to exceed forty hours. The *immediate* cause of death has never been very accurately ascertained, either in the case of tetanus or hydrophobia. Some patients die in a convulsion fit; the greater number sink under the excessive exhaustion of nervous power.

Prognosis and morbid appearances.—The prognosis in hydrophobia may be discussed in a very few words. There is not, to the best of my judgment, a single unequivocal case on record, of recovery from this disease. A variety of supposed cures may indeed be found. The second volume of the Transactions of the London College of Physicians contains two; but the slightest reflection will convince the reader, that neither in origin, symptoms, or progress, did they substantiate their claim to the character of hydrophobia. It must be viewed, therefore, as the only known disease which has hitherto uniformly resisted the efforts both of nature and of art.

This melancholy fact cannot be imputed to any neglect on the part of the cultivators of morbid anatomy; on the contrary, the appearances on dissection, in those who die of hydrophobia, have been recorded with a degree of minuteness which, favourably as it speaks for their zeal, is a proof at the same time how little aid their labours are calculated to afford to the mere *practitioner* in physic. The usual appearances are, turgescence of vessels (by some called marks of inflammation) about the pharynx, and about the cardiac orifice of the stomach. Sir Astley Cooper, in the course of a minute examination of several dogs who died rabid, found effusion of blood into the cellular membrane connecting the mucous and muscular coats of that organ. No morbid appearance has ever been traced in the brain; and though the spinal marrow has been carefully examined, no important læsion has been detected there. These facts, however, are not decisive against the theory which attributes hydrophobia to a disordered condition of the brain and spinal column; because, from the rapid course of the disease, time is not given for those alterations of structure which are so commonly the results of disordered function.

Treatment.—A detailed exposition of the different means which have been resorted to for the relief of hydrophobia would be attended with little benefit to the student. It could only impress upon him that which I have already attempted to urge, the uniform fatality of the disease, and the inefficacy of medical art. It will be sufficient to say, that an ample trial has been given to blood-letting, opium, mercury, ammonia, arsenic, tobacco, musk, and many other antispasmodics; besides a variety of drugs which had nothing to recommend them but the caprice of the practitioner. The latest trials have been made with blood-letting; and though it acquired a doubtful fame in India, the experience of this country has decidedly proved it to be unworthy of general adoption.

Where all plans of treatment have alike failed, it is obviously impossible to offer any useful suggestions for the guidance of the practitioner. *Prevention*, and not cure, must be his object. It is unnecessary with this view to inculcate formally the simple dictate of common sense—a speedy excision of the bitten part. If this is effectually done, the safety of the patient may be considered as ensured. Instances, unfortunately, are not unfrequent of hydrophobia supervening after such an operation; but it is fairly presumable that in such cases some minute wound had escaped the eye of the surgeon. Caustic may come in *aid* of the knife; but considering that the life of the patient is at stake, it should never be allowed to supersede it.

On the preventive *remedies*, especially sea-bathing, and the Ormskirk and Tanjore specifics, I have of course nothing favourable to report. The whole subject is painful, and I gladly leave it, in the hope that science or chance may one day furnish us with a means of combating, even partially, this formidable malady.*

CHAP. IX.

NEURALGIA.

Literary History of this Affection. Its nosological Divisions. Neuralgia facialis, or Tic Douloureux. Its Seat and Symptoms. Prognosis. Diagnosis. Pathology. Treatment. By Narcotics. By surgical Operation. Of the Ischias Nervosum. Neuralgia pollicis.

Painful affections of the several parts of the frame, especially of its surface, independent of inflammation, or of any cognizable disease of the vascular system, are associated by modern pathologists under the generic title of neuralgia. Nothing can be collected from the works of any of the ancient authors in physic regarding them. They have recently attracted great attention, but much still remains to be done, before their pathology can be considered as placed on a durable basis.

Nosologists have subdivided neuralgia into different species, corresponding with the nerves which are the seat of pain. The most common form of it is that which affects the face. Another frequent variety of neuralgia is that which occupies the parts supplied by the pudic and sciatic nerve. Cases are recorded in which a similar painful affection existed in the nerves of the thumb, foot, and mamma. The internal parts of the body are not free from such disorders. Angina pectoris is the neuralgic affection of the heart. All these disorders arise without any assignable cause, and they are therefore strictly *idiopathic* affections. But there are others of a similar character, which occur after bleeding, amputations, and accidents in which injury is done to the nerves. These may with propriety be classed together under the title of symptomatic neuralgia. In the present chapter we shall chiefly be engaged in a brief exposition of what is known regarding the symptoms, pathology, and treatment of that singular disease, known to pathologists as the

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* Interesting and instructive cases of hydrophobia may be found in the following works: Medico Chirurgical Transactions, vol. i. page 132; and vol. xiii. pages 254, 265, and 298. Transactions of the London College, vol. ii. page 46; and vol. iv. page 348. Medical Records and Researches, pages 117 and 139. Medical Communications, vol. i. page 215; and vol. ii. page 290. Medical Observations and Enquiries, vols. i. and iii. Duncan's Medical Commentaries, vols. iii. xii. and xvii. Memoirs of the Medical Society of London, vols. i. iii. and v. Dr. Pinckard has seen and recorded four cases, which he has collected into one small volume. Three of these, and several of the preceding reports, are accompanied by accarate dissections.

NEURALGIA FACIALIS.

The first intelligible description of such a complaint, under the title of *tic douloureux*, appeared in the year 1756, forming part of a Treatise on the Diseases of the Urethra, by M. André, surgeon of Versailles. In 1766 appeared Dr. Fothergill's full and admirable paper on the subject,* which, though partially anticipated by the brief notice of the French author, is well entitled, from its various merits, to be considered as the *original* account of the disease. It was named by Dr. Fothergill dolor crucians faciei; by Sauvages trismus dolorificus. Since the time of Fothergill a variety of memoirs on neuralgia, and notices of neuralgic cases, have been given to the world in the different periodical journals. Among these an ingenious essay by Dr. Haighton deserves particular mention.†

Symptoms.—This affection has its seat in one or more of those branches of the fifth and seventh pair of nerves which ramify upon the face. The nerve most frequently affected is the portio dura of the seventh; next to this comes the second branch of the fifth, then the first of the fifth, and the least frequent of all is the maxillary neuralgia, in which the third of the fifth is primarily implicated. The pain is of a peculiar kind, shooting in a direction which corresponds perfectly with the course and communications of the affected nerve. It will almost always be found to *originate* in a single nerve, from the point at which it issues from its bony canal. From this, as from a common centre, it spreads, until in the progress of the disease it comes to affect every nerve of the face.

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* First published in the fifth volume of the Medical Observations and Enquiries.

† Medical Records and Researches, p. 19. 1798.

In neuralgia the pain is, in the first instance at least, confined to one side of the face; it occurs always in paroxysms, which lengthen and recur more frequently in proportion to the duration of the complaint. It is often excited to an extreme degree of violence by the least exertion of the body, by speaking, the slightest touch, or even a breath of wind. When the affection is fully formed, the pain of it appears to exceed any other variety of human suffering. It occurs with equal severity by day and by night. It is attended with convulsive twitchings of the muscles of the face, which afford a striking feature of the disease, and often impress upon the observer a sense of the acuteness of that pain which the patient experiences.

The natural tendency of the disorder is to rivet itself in the habit, and to terminate only with the life of the patient. It has been known to last upwards of twenty years, and though it renders life a miserable burthen, yet has commonly but little influence in sapping its foundations.

Causes.—The causes of the disease are involved in the deepest obscurity. Of its immediate exciting causes nothing whatever is known; and of those which predispose to it, but little. It attacks both sexes, and apparently in an equal ratio. The robust and the delicate are equally its victims. It rarely originates under thirty years of age. There is reason to suspect that it is rather on the increase in this country; but to what circumstance this can be attributed, it is in vain to conjecture.

Neuralgia has been in a few cases mistaken for rheumatism of the face, toothache, intermittent headache, or abscess of the maxillary sinus. The diagnosis is not difficult, when to the accurate examination of symptoms we add an inquiry into the origin and subsequent progress of the disorder. It would be for the honour of medicine if we could with equal facility unfold its pathology. Dr. Parry has thrown out the hint, that the proximate cause is a chronic inflammation and thickening of the neurilema or vascular membranous envelope of the nerves. Sir Henry Halford has given an interesting series of cases,* tending to show that the disease is often connected with some preternatural growth of bone about the head and face, or with a diseased condition of a bone, or bony canal. Other pathologists have conjectured that neuralgia consists mainly in some obscure affection of the brain. From having known the disease in one instance to terminate fatally by coma, and in another to be followed by amaurosis, I am inclined to look upon this as a legitimate explanation of a certain proportion of neuralgic cases. The affection has resisted the most vigorous efforts of art with a degree of obstinacy, which can be paralleled only by the want of success which so generally attends the treatment of epilepsy, tetanus, and palsy.

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* See London Medical Gazette, vol. i. page 605.

Treatment.—The means hitherto devised for the relief of this disease consist in the employment of narcotics and nervines, local irritants, and the division of the affected nerve. Of the class of narcotics, the principal now in use are opium, conium, and belladonna. Opium constitutes, in fact, the only *effectual* means of relief which we have it in our power to afford. Cicuta was originally recommended by Dr. Fothergill, but his high encomiums have unfortunately not been supported by the results of later experience. Belladonna, in the hands of some practitioners, has been productive of occasional advantage. If a trial of this remedy should be advised, the greatest caution is necessary in the administration of it, so peculiar and so rapid are its effects upon the nervous system.

In the genuine neuralgia, the carbonate of iron, in full doses (a drachm or two drachms, repeated every six hours), has in many cases proved decidedly efficacious; and when we reflect how much of the pathology of the disease rests upon *irritability* and *debility* of the frame generally, we may account satisfactorily for the result. Bark and arsenic have also acquired a character for the relief of neuralgia.

The local irritants which have chiefly been employed are leeches and blisters, embrocations with the cerussa acetata, issues, and electricity. In the case of a young woman who came under my care some years ago, having many of the symptoms of neuralgia, decided benefit was obtained by the application of leeches, a blister, and the free employment of active purgative medicines. The affection under which she laboured is not uncommon; and I particularly allude to it here, having reason to believe that it is sometimes mistaken for *genuine* idiopathic neuralgia. From this, however, it differs in the circumstance of its occurring at an earlier period of life. I have observed it only in young women; and I believe it to depend chiefly, if not entirely, upon a disordered and torpid condition of the liver and bowels.

The idea of dividing the affected nerve first occurred to some French surgeons in 1766; but was not generally adopted until the result of Dr. Haighton's experiment, in 1788, became known. In that case the operation proved completely successful; but subsequent experience has greatly diminished the hopes that were entertained of the probable benefits of such a measure. It has even appeared in some late instances to add to the sufferings of the patient. The excision of a portion of the nerve has been practised in a few cases, but without any corresponding advantage.

For the present, therefore, we can do little more than palliate the symptoms by opium. The discoverer of a medicine worthy of general confidence will have a strong claim upon the gratitude of mankind.

ISCHIAS NERVOSUM.

I have too little experience in the other varieties of idiopathic neuralgia, to enter upon their consideration with any prospect of utility to the student; and authors are almost silent on this neglected portion of pathology. One of the most strongly marked among them is that called ischias nervosum, a chronic ailment, marked by severe pain in all the branches of the great sciatic nerve, and not always easily distinguished from the rheumatic sciatica formerly treated of (page 312). In some of these cases, the branches of the pudic nerve have been the seat of excruciating pain, depriving the patient for many successive nights of all sleep, and thereby rapidly exhausting the frame. Nothing is known regarding the causes of such a disorder. It sometimes yields to the mere influence of time, but medicine can do little to shorten its course. Laudanum affords the only relief. It is happily very rare.

NEURALGIA POLLICIS.

A paper by Mr. John Pearson, in the eighth volume of the Medico-Chirurgical Transactions,* gives a detailed account of a painful affection of the extremity of the left thumb, of a decidedly neuralgic character. After resisting a variety of plans of treatment, it ultimately yielded under the use of the following liniment, which produced a high degree of irritation in the skin of the arm:—

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* Page 252.

℞ Olei olivæ, ℥ijss.
—— terebinthinæ, ℥jss.
Acidi sulphurici, ʒj. Misce.

A portion of this liniment is to be rubbed upon the affected part, during ten minutes, twice in the day.

To this paper are annexed some useful reflections on the nature and management of those cases of symptomatic or local neuralgia, which are the consequences of injury to a nerve; but on a subject which is strictly within the province of the surgeon, the design of this work relieves me from the necessity of offering any observations. The reader who may wish for some further information on the subject, may consult with advantage Mr. Swan's Dissertation on the morbid local affections of Nerves.*

CHAP. X.

HEADACHE.

Prevalence of Headache in acute and chronic diseases. Of Chronic Headache. Its principal varieties. Headache with Plethora, and increased action of vessels. Of bilious, nervous, and sympathetic Headache. Of the Intermitting Headache, Hemicrania, or Brow-ague. Its symptoms and progress. Treatment of the several forms of Chronic Headache. Of Giddiness. Its pathological relation to Headache.

One of the most frequent occurrences in the progress of acute diseases is cephalalgia, or headache. We have recorded it as a symptom of intermitting, remitting, and continued fever. That peculiar variety of it called *gravedo*, is a characteristic mark of catarrh. Headache is a prominent symptom of scarlet fever and the other exanthemata. It constitutes a leading feature of acute and chronic inflammation of the brain. It is one of the symptoms by which we judge of the probable approach of apoplexy or palsy. It both precedes and follows the epileptic paroxysm. It accompanies many of the structural changes which the brain and its membranes undergo. In fact, there are few disorders in which headache does not occur, either as an accidental or essential symptom.

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* Chapters iv. and v. London, 1820.

On some occasions, unconnected with fever, headache predominates so much over all the other phenomena, as to have emerged from the rank of symptoms into that of diseases. In almost all nosologies, except that of Dr. Cullen, cephalalgia, cephalæa, and hemicrania find a place, and if nosological arrangement was of sufficient importance to deserve the labour, strong reasons might be adduced in support of their claim to this distinction. But whether we view chronic headache as an independent disease, or merely as a leading and prominent symptom, it is of consequence that the student should know under what circumstances of the general system it shows itself, —what is its usual progress,—and how it may be most effectually relieved.

There are three principal varieties of chronic headache. The first is connected with plethora or fulness of blood, and is associated with many unequivocal proofs of increased action of the several branches either of the external or internal carotid artery, or both. The second is the nervous or sympathetic headache, which, depending in almost all cases upon a state of indigestion, is usually known by the name of bilious headache, or sick headache. The third is, *præ aliis*, entitled to be ranked as a separate disease. It is called the intermitting headache, or brow-ague, the cephalæa of Sauvages. Each of these forms of headache merits a separate investigation.

1. HEADACHE WITH PLETHORA.

Headache is often met with, accompanied with evidences of general plethora. The pulse is full. There is giddiness on stooping, or a disposition to lethargy. The vessels of the tunica conjunctiva are loaded. There is a constant sense of pulsation in the ear. The temporal arteries, and sometimes even the carotids, may be seen to beat with more than their usual force. The disease occurs in persons who have been living freely, more particularly in those who have been in the daily habit of taking ale or porter. It is met with in those who without such indulgences, use little or no exercise in the open air, and rise late in the morning. It is a frequent complaint with young unmarried women of full habit of body, and is often associated with irregularities of the menstrual function. It may perhaps have for its exciting cause, a suppression of the menstrual discharge.

In some cases headache is obviously connected with increased action of the vessels about the head, but without evidence of accompanying plethora. It sometimes partakes of a rheumatic character, and has been described by some authors as the rheumatic headache. It occupies the situation of the occipito-frontalis and temporal muscles. The periosteum is sometimes the seat of pain, which frequently extends to the face and teeth. This sort of headache is accompanied with superficial tenderness, throbbing of the temporal arteries, and increased heat of the head. The pulse is frequent and sharp, and the tongue white. Headache of this kind may sometimes be traced to anxiety of mind, long continued study, and a succession of sleepless nights, but its principal exciting cause is cold and wet. It often follows the imprudence of standing in a current of air, after being overheated by exercise.

II. BILIOUS HEADACHE.

Bilious headaches are of two kinds, the accidental and the habitual. The first arise from some obvious error of diet,—either overloading the stomach, or taking into the stomach some substance which even in small quantity offends it, such as champagne. Headaches from excess usually last about twenty-four hours.

The habitual bilious headache often arises without any cognizable exciting cause. It is one of the series of symptoms occasioned by imperfect digestion. Persons of weak stomach, therefore, are liable to suffer from it at any time, and the utmost attention to diet is frequently insufficient to ward off an attack. When the stomach is from any cause unequal to its office, the food remaining unchanged irritates the nerves of the stomach, and thus occasions, by sympathy, headache. Under these circumstances the secretion and passage of the bile become slow, irregular, and imperfect. The bowels consequently are torpid, and the general circulation languid.

The weakness of stomach, to which the whole series of phenomena are referrible, is connected in all cases with constitutional debility. The temperament is nervous. The system is irritable, and trifling causes will in such habits deprive the stomach of that share of nervous influence which is requisite for the due performance of the duty of digestion.

We are indebted to Dr. Warren for a clear and most comprehensive view of the subject of chronic headache.* In his Essay, the dyspeptic form of headache is more especially adverted to, and to it I am chiefly indebted for the following sketch of its character and course.

The attack of dyspeptic headache is preceded by restlessness, indistinctness of ideas, disinclination for mental exertion, coldness and dampness of the hands and feet. To this succeeds pain, or rather dull aching of the head (generally the forehead, but sometimes the crown of the head or occiput) with a sense of weight, pain, distension, or stiffness of the eyeballs. In some cases, the disorder is accompanied with a dimness of vision, succeeded by the sudden appearance of colours and luminous forms. In other cases the headache and indistinctness of vision are attended with giddiness and sense of alarm. The patient is confused and fearful of falling. He feels insecure unless in company, and is at all times unwilling to venture abroad. Coldness and numbness of the feet and fingers accompany this kind of dyspeptic cephalalgia.

The gastric symptoms are seldom so urgent as these sympathetic affections would lead the observer to anticipate. The tongue is usually covered with a white or yellow fur. There is some nausea, but seldom any disposition to vomiting. The appetite, perhaps, is unimpaired. The evacuations, however, generally present an unhealthy aspect; portions of undigested food may sometimes be traced in them. Dr. Warren is of opinion that many cases of headache are rather owing to imperfect action of the *duodenum* than of the stomach. This opinion is corroborated by observing that the act of vomiting affords but little relief, and that the character of the matter vomited does not present any sufficient explanation of the phenomena.

Headaches of this kind, when habitual, are often protracted through one, two, or even three days. When first occurring their course is usually terminated in a few hours.

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* Transactions of the Royal College of Physicians of London, vol. iv. p. 233, 1813.

III. HEMICRANIA, OR INTERMITTENT HEADACHE.

The third variety of headache is characterized as well by the severity of the pain, as by its tendency to recur every day, or every other day, at the same hour, and often with a degree of regularity equalled only in the phenomena of an ague. By the vulgar, this disease is sometimes called the brow-ague, and some pathologists have attributed its origin to malaria. There are no adequate grounds, however, for this opinion. The disease has for its predisposing cause constitutional weakness. I have traced it to the exhaustion occasioned by frequent pregnancies and nursings, to the want of due bodily exercise, and to long continued mental anxiety. It differs from the preceding species in not being so distinctly connected with disturbed function of the digestive organs.

Intermittent headache usually has its seat on the left side of the head. It generally makes its attack in the forenoon, and the paroxysm of pain lasts three or four hours. The violence of the pain is sometimes excessive. There can be no doubt that the vascular system is either primarily or secondarily involved in it. In one very severe and obstinate case of it, I witnessed extensive ecchymosis of the forehead and eyelid, from the bursting of a small blood-vessel. Intermittent headache is often unconnected with any cognizable disorder of the stomach and bowels. In many cases it runs a certain course, uninfluenced by medical treatment, reaches its crisis, and then gradually declines. In this way I have seen it protracted through a period of several months, the patient ultimately recovering, and no disposition to relapse being left, as in the true bilious headache.

Treatment of headache.—The several species of headache now separately described for the convenience of elementary instruction, will often be found in practice, to run into each other. I shall, therefore, in the following remarks on treatment, consider headache as a generic disease, and satisfy myself with pointing out the principles on which its cure or relief should be attempted.

The indications of cure are three:—First, to aid the digestive process, and to free the stomach and duodenum from irritating matters. Secondly, to relieve the tension or congestion of the blood-vessels of the head. Thirdly, to strengthen the general system, and by so doing to give energy to the nerves. To fulfil these objects the principal remedies resorted to are, emetics, purgatives, mild aperients, absorbents, cordials;—general and local blood-letting, cold spirituous lotions to the head, blisters;—tonics, nervines, and, lastly, change of air.

An emetic is fit only for an acute attack of headache, attributable to an overloaded stomach, and accompanied by nausea. In all other cases it contributes to weaken the stomach, and thus favours a recurrence of the disease. Active purgatives are very useful in strong and plethoric habits. Four grains of calomel with six of colocynth extract is a convenient formula. But such active purgatives are ill suited for the habitual bilious headache. It will often be found that the symptoms yield long before any evacuation has been procured, showing that the *irritable* condition of the intestinal mucous membrane, upon which the headache depended, was confined to the stomach, duodenum, and jejunum. Rhubarb and magnesia, combined according to the following formula, constitute a very appropriate aperient for such cases:—

℞ Pulveris rhei, ℥ss.
Magnesiæ ustæ, ℥j.
Pulveris zingiberis, ʒij. Misce.
Sumat cochlearia ij minora pro dosi.

An attack of dyspeptic headache is frequently relieved by some medicine that promotes languid digestion, such as a teaspoonful of powdered ginger, or a glass of brandy.

When headache occurs in full and plethoric habits, blood must be taken from the arm. When the evidences of locally increased action are unequivocal, relief is sometimes afforded by leeches. Eau de Cologne to the temples is a familiar and useful application for the same purpose. In severe cases it is often necessary to shave the head, and to apply cold lotions diligently. A blister behind the ear is often advantageous.

In that aggravated form of headache called the brow-ague, a more complicated system of management, steadily pursued, is requisite to re-establish the health. Due consideration must be given to the weakness of the general habit, and the aid of tonics and nervines must be called in. The bowels should be relieved by warm aperients, such as the compound decoction of aloes, or the compound rhubarb pill. The tone of the stomach must be supported by aromatic bitters, such as the infusion of cascarilla and calumba, to which ten grains of the powder of valerian, or a drachm of the tincture, may be added. The efficacy of quinine is often strikingly displayed in the relief of intermittent headache, and contributes to the belief that the affection is really of an aguish nature. It may be given in full doses frequently repeated. In the advanced stages of the disease, nothing will contribute so essentially to recovery, as change of air.

It is hardly necessary to add, that in all cases of headache, but especially in those connected with faulty digestion, the utmost attention should be paid to regimen. Regular exercise and early hours are to be encouraged. Hot and crowded rooms are to be avoided. The feet are to be protected from cold, and warm clothing should be rigidly enforced. But, above all things, the diet is carefully to be regulated, both with respect to quality and quantity.

It remains to be observed, that headache depends, in some cases, simply upon *costiveness*, the functions of the upper bowels being duly performed. The diagnosis and treatment of this variety of headache are sufficiently obvious.

VERTIGO.

Closely allied to headache is that peculiar nervous feeling denominated dizziness, giddiness, or vertigo. It very often accompanies headache, and its pathology is, in all important points, as regards practice, the same. It is frequently connected with, and directly dependant upon, plethora, or venous congestion about the head, and is relieved by cupping and general blood-letting. But, in a variety of cases, giddiness has for its exciting cause indigestion; and occasionally giddiness accompanies an attack of dyspepsia through its whole course, and constitutes the leading feature of the complaint for many successive weeks. Under such circumstances vertigo is to be treated in the manner already directed for the management of dyspeptic headache.

CLASS VI.

CHRONIC DISEASES OF THE THORAX.

CHAP. I.

BRONCHOCELE.

Nature of the Affection. Symptoms and Progress of the Disease. Speculations concerning its Cause. Treatment. By Medicine. Influence of Iodine. By surgical Operation.

Bronchocele, or the goitres, is a chronic indolent enlargement of the thyroid gland, occasioning swelling of the fore part of the neck, often to such an extent as to produce great deformity. The tumour, however, is quite free from pain, and does not appear to give rise to any degree of constitutional disturbance. There is no malignity in the disease, nor any disposition in the tumour, except from accidental circumstances, to take on inflammatory action.

The precise nature of the swelling which constitutes bronchocele has been a frequent object of investigation. The section of a thyroid gland affected by this disease exhibits a congeries of cells containing a transparent viscid fluid.* The size of these cells differs in different cases; although externally the tumour shows the same character. It varies even in different parts of the same gland. Some of these cells are sufficiently large to contain a pea; the generality are smaller. Reasoning from the change of structure thus observed, Dr. Baillie conjectures that bronchocele may depend upon an increased and vitiated secretion from the gland, which gradually distends its cells, and forms the swelling characteristic of the disease.

Doubts have been entertained, whether there are not different *species* of this disorder. Distinctions have been drawn between the sanguineous and the sarcomatous, the common and the scrophulous bronchocele; but these are probably of no real importance. If any essential differences do exist in the morbid changes of structure which the gland undergoes, the appearances presented on dissection are not sufficiently uniform to warrant us in characterizing them with precision.

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* Vide Baillie's Morbid Anatomy, fifth edition, page 91.

There are, it is true, some slighter variations in the affection, which have always been acknowledged. The tumour varies, for instance, in point of consistence. It is hard and unyielding, or soft and spongy. In some cases, the whole body of the gland is involved in the disease, while in others the swelling is partial, affecting one lobe of the gland only, or portions of it, so as to occasion tumours that project irregularly over the anterior part of the neck.

In all cases of bronchocele there are grounds for believing that an unusual determination of blood to the gland takes place. There is very often a sensible throbbing of the tumour during life. After death, too, the blood-vessels connected with the gland, both arteries and veins, are found enlarged, and this enlargement is made particularly apparent by injecting them.

The size which the tumour acquires after a lapse of years is often enormous, and its mere weight produces no inconsiderable inconvenience. The adjacent cellular membrane and lymphatic glands in process of time participate in the disease, and the whole neck becomes enlarged. That this should exist without prejudice to the life or general health of the patient, is more surprising than that it should occasionally give rise to alarming symptoms, and be the immediate cause of death. The tumour itself becomes in some instances painful, the veins of the neck enlarge, there is hoarseness and headache, and that long train of evils is felt which inevitably results from obstructed respiration.

Causes.—The causes of bronchocele are involved in great obscurity, and have given rise to much discussion. It has been the object of authors to discover some one cause to which every case of bronchocele may be traced; but such an expectation is neither reasonable nor warranted by pathological analogies. Like swelling of the liver or spleen, bronchocele may arise from many causes, differing essentially from each other. For all practical purposes it is sufficient to inquire under what circumstances bronchocele shows itself. We may thence deduce some conjectures as to the actual causes of the complaint. The influence of age, of habit, and of climate must be separately examined.

1. Bronchocele is rarely, if ever, observed in children before the ninth year. It commonly makes its first appearance about the period of puberty; and this leads us to conjecture that it may, to a certain degree, be connected with the change in the whole system observable at that period. The alteration of the voice is a decisive proof that at least the parts in the neighbourhood of the thyroid gland then undergo some peculiar and unexplained change. As life advances bronchocele becomes more and more common; and in districts where it prevails extensively, few persons reach to an advanced age without experiencing it in a greater or less degree.

2. Bronchocele chiefly occurs in persons of relaxed constitutions, and in such as have fair and delicate skins. It is more frequent in women than men. It often accompanies scrophula, and is by many considered an evidence of the scrophulous habit. Bronchocele has long been known to prevail in particular families, and deserves to be ranked as an hereditary complaint. Where the family predisposition is very strong, the first attack of the disease occurs at a proportionably early period of life.

3. Bronchocele, though not absolutely unknown in any part of the world, yet occurs in some with such extraordinary frequency as to have been considered the great *endemic* of particular districts. In valleys enclosed by lofty mountains, in which the reflected as well as the direct rays of the sun occasion very dense fogs to be raised, this disorder more especially abounds. Hence its frequency in all the valleys of Switzerland, and, generally speaking, in mountainous rather than in level countries. That its prevalence in these situations is not attributable to the use of snow-water, nor to a poor unwholesome diet, is now the concurrent testimony of all observers. It prevails in every part of the world, in the hottest as well as the coldest regions, and in every class of persons. It is common in Sumatra, and many other climates, where snow is never seen; while in Greenland and Lapland, where the inhabitants use snow-water almost exclusively, bronchocele is hardly known. In America it chiefly prevails

where the lands are covered with wood. In proportion as the country is cultivated, and the lands cleared, it is found to decline. Goitre has been observed in places particularly open to the influence of southerly winds, in the neighbourhood of rivers and lakes, and generally, wherever much moisture prevails. It chiefly appears among those who are exposed unguardedly to the influence of the weather.

All these circumstances point out an important connection between bronchocele and some peculiarity in climate. What this is, it would be impossible accurately to specify; but apparently it is *humidity*. There may, perhaps, be exhalations from damp soils which give rise to bronchocele; but our ignorance of the nature and uses of the thyroid gland, joined to the obscurity which always attaches to reasonings on the origin of a disease, preclude any degree of certainty in these speculations.

Treatment.—The extensive prevalence of this unsightly disorder proves how little is known concerning the principles of its treatment; or rather, how completely it is beyond the control of medical art. Every plan which ingenuity could suggest, or caprice devise, has been tried, and tried in vain. It is still abundant in all countries; and, as Dr. Somerville has observed, the families of medical men are not exempt from it. All practitioners, however, agree, that to entertain any sanguine hopes of a cure, the disorder must be in an incipient state. When the morbid structure of the gland has been thoroughly established, our chance of removing it, even by surgical operation, is extremely precarious. The treatment of bronchocele divides itself into three heads; constitutional, local, and surgical. A few observations on each of these will point out the most approved methods of cure admitted in modern practice.

1. Among the earliest measures proposed in recent times is the internal administration of burnt sponge, and the instances of success from this remedy are so numerous as might at first incline the student to believe that the object of his research is found.* No doubt can exist that this medicine has cured many cases; but it would be much easier to show those in which it totally fails of imparting even the

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* Consult the papers on the use of burnt sponge in bronchocele, in vols. iv. v. and xi. of the London Medical and Physical Journal, by Mr. Ring.

smallest relief. It is said to be most effectual when given in the form of electuary and lozenge, and allowed to dissolve slowly in the mouth. Its use should be continued at least four or five weeks before any opinion is given as to the probability of ultimate benefit from it. The mode of its operation is not at all known. By some, the virtues of the remedy are made to reside in the alkali, or in the charcoal which it contains; and later theorists have imagined that iodine is its active principle. These speculations led to the introduction of different preparations of iodine in the treatment of bronchocele; and experience has now fully demonstrated that this substance is possessed of considerable medicinal virtue. It appears to excite the absorbent system in a peculiar manner. It is a true deobstruent. Its employment is frequently succeeded by general emaciation, but it is of course in the removal of morbid growths and indolent tumours that its power is chiefly displayed. In goitre it may be given both internally and externally. For internal use we may direct ten drops of the tincture of iodine (gradually augmented to twenty), to be repeated three times a-day. The tincture is made by dissolving twenty grains of iodine in half an ounce of spirit of wine. Externally applied, the remedy is much less active, but is nevertheless well deserving of a trial. It may be used in the form of ointment, as thus:—

℞ Hydriodatis potassæ, ʒj.
Axungiæ, ℥j. Misce.

Some benefit has been derived in bronchocele from the use of other medicines of a deobstruent quality, more particularly the liquor potassæ, and the carbonate of soda, in conjunction with small doses of calomel, and such gentle aperients as regulate the functions of the bowels without weakening the system. Rhubarb and the neutral salts, in small doses, are recommended for this purpose. Dr. Gibson, of Baltimore, states that the extract of hemlock, well prepared and diligently taken, seldom fails to afford relief under favourable circumstances—that is, where the patient is not above twenty years of age, where the tumour is spongy, where the disease has not existed long, and where it occurs sporadically.

2. The application of leeches to the throat has been found useful; but, to produce any decided effect upon the complaint,

they must be frequently repeated. Frictions with mercurial ointment and camphor, or with the soap liniment, may be tried with some prospect of advantage, as calculated to excite the action of the absorbents. With the same view the repeated blisters, recommended by Mr. Benjamin Bell, may possibly be serviceable. Simple but steady pressure upon the gland appears to contribute, in no inconsiderable degree, to the dispersion of the tumour.* The constant use of a neckcloth has sometimes checked the progress of the disease when early resorted to; and to the want of such support I have heard Italian physicians ascribe the greater frequency of the complaint in females. It is a well-established fact, that a simple change of residence from the valley where the goiterous person first received the disease, to a different district, or even to a higher spot on the side of the mountain, has in many instances diminished the size of the tumour, and occasionally removed it entirely.

3. When the tumour becomes so large as to produce great deformity, or to endanger suffocation; or when, at an earlier period of its growth, the methods now proposed are ineffectual, the aid of surgery has been called in, and relief attempted by an operation. Three surgical plans of treatment have been devised. The first is, extirpation of the thyroid gland; an extremely formidable and hazardous operation, of which I know but one successful case on record. The second is tying the superior thyroideal arteries. A case in which this proved for a time successful is to be found in the Medico-Chirurgical Transactions.* The operation was performed by Mr. Coates, in the Salisbury Infirmary, on a young woman seventeen years of age. The artery of the left side only was tried, and in a short time the size of the tumour was reduced one half. The third plan of surgical treatment is the insertion of a seton into the body of the gland. Several cases of partial, and one or two of complete relief from this remedy, have been recorded;† but it is doubtful whether the measure be entitled to any large share of praise. In some cases the seton occasioned a high degree of irritation about the throat, rendering its immediate removal indispensable.

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* See London Medical Repository, vol. viii. page 288.

† Volume x. page 312.

‡ Medico-Chirurgical Transactions, vol. x. page 16.

Upon the whole, we are led to conclude, that though the means of relief in the hands of the physician are far from possessing any general or very decided efficacy, they are nevertheless preferable to those severe and more doubtful measures which surgery has hitherto contributed.

CHAP. II.

DYSPNŒA AND ASTHMA.

Nosological Difficulties connected with Disordered Respiration. Of Dyspnœa as a Symptom of Disease. Its several Causes. Dyspnœa Permanent and Spasmodic. Asthma. How characterized. Phenomena of the Asthmatic Paroxysm. Progress of the Disease. Predisposition. Exciting Causes. Pathology. Morbid Anatomy of Asthma. Treatment—during the Paroxysm—in the Interval. Influence of Nauseants. Acids. Narcotics. Antispasmodics. Laxatives. Tonics. Diet and Regimen.

Much labour has been bestowed by nosologists in classifying the different kinds of disease which derive their chief character from disordered respiration; but to so little purpose, that the language of medical men, in regard to them, is even at present hardly more accurate than that of the world in general. The difficulties lie in the very nature of the subject; which is so extensive, so complicated, and so obscure, as not to admit of that precise elucidation which is indispensable in artificial arrangements. The function of respiration is of such importance in the animal œconomy, and the organs subservient to it (membranes, blood-vessels, nerves, muscles, glands) are so numerous and so variously connected, that it is hardly possible for disease to exist without implicating it more or less. Accordingly, *difficult breathing* will be found to be one of the most frequent *symptoms* met with in practice; and those who have ever experienced a fit of illness will acknowledge it as one which presses upon the patient more heavily than perhaps any other.

DYSPNŒA.

The *pathological* considerations connected with dyspnœa *as a symptom of disease* are of the highest importance; and they demand, from the practical physician, the fullest investigation which the state of the science permits. In the course of the present chapter I shall be led to touch upon most of those interesting topics of general inquiry which this branch of the study of physic involves; but a complete discussion of them would far exceed the limits to which I have here confined myself.

The first questions of the student will naturally be, what are the immediate causes of difficult respiration, and which of them are the most frequently met with? A reply to these inquiries will lead to a knowledge of the most important *practical* divisions which have been made among the cases of disordered respiration.

Sources of dyspnœa.—1. Difficulty of breathing, in the first place, is a symptom of *general fever*. The increased velocity with which the blood, during fever, passes through the great vessels of the lungs, disturbs their functions, and the natural consequence is dyspnœa. 2. It occurs as a symptom of the early stage of inflammation in the *mucous* membrane of the lungs and air-passages, and is therefore a leading feature in laryngitis, croup, severe catarrh, and the several modifications of bronchitis. It is attributable here to the *loaded* or congestive state of vessels in the affected membrane. Preternatural secretion from the glands of the bronchia, or from their secreting mucous surface, whether habitual, or the result of chronic inflammation, always creates dyspnœa. It is felt most oppressively in the morning, and is relieved only by the labour of long coughing. 3. Difficult respiration is a symptom of inflammation, in the serous membrane of the thorax; probably, because by the free expansion of the lungs the pleura is placed upon the stretch. 4. It is equally the result of deposition in the parenchymatous substance of the lungs, and is hence the most important of the symptoms of acute peripneumony, and tubercular phthisis.

5. Permanent dyspnœa is the natural consequence of malformation of the thoracic parietes. 6. It is a common attendant on hydrothorax, pneumothorax, emphysema of the lungs, organic diseases of the heart, aneurism of the aorta, and other mechanical impediments to the free expansion of the lungs. 7. In certain cases dyspnœa is believed by many pathologists to arise from a much less obvious cause, *viz.* some irregular

spasmodic action of the muscles concerned in the function of respiration. This we shall hereafter see to have given occasion to much controversy. A strong argument, however, in favour of the reality of such a cause of dyspnœa may be found in the circumstance of its being traced, 8thly, to the existence of disease within the head. A peculiar modification of difficult breathing is, as I have already stated, a distinguishing feature of apoplexy. It is presumable, that in this case dyspnœa is owing to impaired function of the *par vagum.*

Lastly, dyspnœa has its origin, in a large proportion of cases, from disturbance in the functions of the abdominal viscera. Sometimes, as in the case of flatulency of the stomach, a constipated and distended state of the colon, or a swelled liver, this may be imputed to the mechanical obstruction offered to the descent of the *diaphragm.* In other instances, as in that of worms, the difficulty of breathing is referrible only to the principle of nervous sympathy,—an explanation which is not to be discarded because less intelligible than some which have preceded it.

This brief and imperfect sketch of the various causes of dyspnœa will probably be received as sufficient evidence of the obscurity in which the subject is enveloped. It results from it: 1. That difficult breathing is equally to be met with in acute and chronic diseases; 2. That it arises, partly from causes existing within, and partly from such as are exterior to the thorax; 3. That it admits of a division into the two great classes of *permanent* and *spasmodic.* Upon this latter distinction much stress has always been laid by nosologists. They have generally agreed in restricting the term *dyspnœa* to the cases of permanent difficulty of breathing, while to the spasmodic or recurrent varieties of disordered respiration, they apply the generic term *asthma.* In this sense, which may fairly be considered as the correct one, dyspnœa can only be viewed as a symptom, and as such cannot properly be treated of in this place. The case is different, however, with regard to *spasmodic asthma.* This affection of the breathing has long been regarded as *idiopathic*, and it has unquestionable claims to such a distinction.

ASTHMA.

Asthma was well described by the Greek and Roman authors, and has always been a favourite topic of speculation among medical writers. The latest and by far the most complete account of the disease which has ever appeared is that of Dr. Bree,* to which I am chiefly indebted for the following outline of its symptoms, causes, and method of cure.

Symptoms.—There is often some degree of warning given of the approach of an asthmatic paroxysm, not by thoracic symptoms, but by those of indigestion, heartburn, flatus, itching of the skin, pain over the eyes, and sleepiness. The attack most commonly occurs at night, and the patient is perhaps waked out of his sleep by it. The student will not fail to observe in this circumstance, an analogy between spasmodic asthma and epilepsy. To those who experience or witness a paroxysm of asthma for the first time, it appears one of the most formidable diseases to which man is liable. The patient is oppressed by a tightness across the breast, which so impedes respiration, as to threaten the immediate extinction of life. He starts up into an erect posture, and flies to the window for air. For a considerable time his breathing is performed by gasps, slowly and with a wheezing noise; speaking is difficult and even painful to him; there is often present also a propensity to coughing. The natural sound of respiration in the paroxysm of asthma is always much diminished, and in severe cases is inaudible over the whole chest.

In this state of urgent distress the patient continues till the approach of morning, when a remission commonly takes place. However suddenly the fit began, it always goes off slowly. By degrees the breathing becomes less laborious, and coughing and speaking are performed with greater ease. In the generality of cases a copious expectoration of mucus at length takes place, and with it the paroxysm ceases, and the patient falls asleep. During the fit the pulse usually continues of the natural standard, the surface of the body is pale, the muscles appear shrunk, and there is a considerable flow of limpid urine. In a few cases expectoration is very scanty. This, which in itself is an unimportant circumstance, was by the humoral pathologists advanced to a distinguished rank among the symptoms of the disease, and made the ground-work of its division into the two species of *dry* and *humid* asthma.

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* Practical Inquiry into Disordered Respiration, by Robert Bree, M.D. fifth edition. London, 1815.

During the next day, the asthmatic experiences some remaining sense of stricture across the breast, and any exertion of the body increases his uneasiness. At night the urgent difficulty of breathing returns, and in this manner he is harassed for three or four successive days; after which, the symptoms gradually yielding, he enjoys his usual rest without further disturbance. This terminates the paroxysm of asthma.

When it has once taken place, the disease is apt to recur periodically, and when the asthmatic disposition is very strong, to be brought on at all times by some of the circumstances which I shall presently enumerate. I have previously to observe, that a degree of difficulty of breathing, particularly on ascending a hill or flight of steps, is never wanting during the intervals, and respiration is always attended more or less with *wheezing;* that is, with a morbid accumulation of mucus in the bronchial tubes. Persons subject to asthma acquire a peculiar expression of countenance easily recognised when once observed.

Predisposition.—Little is known on the subject of predisposition to asthma. It has some title to rank as an hereditary complaint; it is not confined to any particular age or sex. The period of youth and manhood is the most prone to it. It is sometimes connected with a deformed state of the chest. The asthmatic disposition commonly exists along with other marks of an *irritable* habit of body. This general principle pervades the whole pathology of asthma. It will be obvious in the strong tendency to dyspepsia which all asthmatics have; in the slightness of the cause which often induces a fit; in the great facility, lastly, with which the asthmatic convulsion, when once excited, runs into excess, and rivets itself in the constitution, recurring at last by the mere force of habit.

In ordinary cases, the exciting causes of the paroxysm are sufficiently perceptible, and they exhibit the most singular varieties. Dr. Bree considers them as qualified by their importance to become the basis of a practical division of asthmatic cases; and he refuses to acknowledge any differences in the *phenomena* of the asthmatic paroxysm calculated to attain this object. From this we may learn to estimate the claims upon our attention which the *exciting causes* of asthma possess.

Exciting causes.—1. In the predisposed, an asthmatic paroxysm is frequently the result of particular states of the atmosphere, varying, however, in different cases. One man finds his breathing easy in the most crowded and smoky parts of London, and has a fit the moment he returns into the pure dry air of the country. Some asthmatics can go with impunity into a hot and crowded room, which others would shun as the sure prelude to a paroxysm. Some have their fits in summer, and others dread the approach of cold weather. An asthmatic is a perfect barometer. In a close room he knows when the weather changes, and confidently pronounces the wind in the east.

2. Various sorts of irritating matters conveyed to the lungs by the air, and occasioning, under common circumstances, a fit of sneezing, will, in those predisposed to asthma, bring on a paroxysm. Dust, perfumes, tobacco smoke, metallic fumes, the powder of ipecacuanha, and the vapours of sulphur, have had this effect in many cases.

3. Asthma is often occasioned by whatever quickens the motion of the blood generally, or determines it particularly to the lungs; such as severe exercise, loud speaking, exposure to cold, and suppressed evacuations.

4. A very frequent and important cause of the asthmatic paroxysm is a loaded, weakened, or otherwise disordered state of the stomach and bowels. This cannot surprise us when we reflect how generally dyspeptic persons, having no asthmatic diathesis, complain of difficult breathing, especially in the horizontal posture. The principle is of extensive application in the treatment of asthmatic affections.

5. Asthma is occasionally induced by causes which cannot operate but through the medium of the nervous system. Of this kind are vehement emotions and passions of the mind, the anxieties of business, or the exertion of deep thought.

6. I have already had occasion to allude to the great law of convulsive motion, *viz.* that, whatever be its origin, the certain consequence of its repeated attacks will be that increased *mobility* of the whole frame which occasions a renewal of diseased actions by the mere force of *habit*. This principle is particularly applicable to asthma, which fixes itself in the constitution with an inveteracy equalled only by that of epilepsy. Yet, with all this, asthma cannot be considered as a disease of danger. No instance is perhaps on record of a fatal event occurring during the paroxysm; and it can hardly

be said to engender other diseases of a dangerous nature. Many confirmed asthmatics have accordingly attained a good old age. The gradual inroads, however, which, when uncontrolled, it makes upon the constitution, embitter all the enjoyments of life, and should be sufficient to induce the patient to submit to any privations that may be necessary towards his cure.

Proximate cause.—Pathologists in all ages have exerted their ingenuity in determining, if possible, the precise seat of the asthmatic convulsion, and its true nature or proximate cause. Much controversy has arisen on both these questions, and they are still involved in considerable obscurity. The bronchial tubes have usually been considered as the primary *seat* of asthma. The mucous membrane lining them is, in this disease, exquisitely irritable; but the phenomena of asthma concur in pointing out that there is some *spasmodic* impediment to the entrance of air into the chest. The old authors considered, and probably with reason, that the seat of this spasm was the muscular fibres of the bronchia. Others have fixed the seat of the spasm differently, finding a difficulty in reconciling the notion of spasmodic *contraction* with the peculiar anatomical structure of the bronchia. In the exquisite form of the asthmatic paroxysm, every muscle that can assist in respiration is affected.

Another great question upon which pathologists have divided, is, whether the spasmodic action existing in some one of the structures about the chest be the *cause* or the *consequence* of that superabundant mucus in the bronchial tubes, which all admit to constitute so material a part in the phenomena of the asthmatic paroxysm. Dr. Cullen (with other Hoffmannians) contends, that it is the *cause*—that the spasm is the primary feature of the disease, and the effusion of mucus the natural relief of such diseased action. Dr. Bree, on the other hand, joins with the old humoral pathologists in maintaining, that the convulsive efforts of the asthmatic are only *secondary* phenomena, being set up with the view of throwing off an excessive secretion from the mucous membrane of the bronchia. Dr. Bree has undoubtedly argued the question with great ability, but the general laws applicable to secretion and convulsive action do not appear to bear him out in his conclusions; besides which, the occasional occurrence of asthma with little or no secretion from the lungs, the very frequent circumstance of excessive accumulation there without any spasmodic action excited to disengage it, the phenomena of hooping-cough, and the analogy of both asthma and hooping-cough to epilepsy, tend still further to the belief, that the first link in the chain of phenomena is convulsive action.

Morbid anatomy of asthma.—The researches of pathologists into the morbid anatomy of asthma have thrown but little additional light upon its nature. This may partly be accounted for, by considering that the disease is not of that fatal character which gives to the anatomist opportunities of exercising his skill. In the greater number of recorded dissections, the appearances are to be looked upon either as the consequences of the disease, or as accidentally concomitant lesions. Nearly two centuries ago, Willis remarked that, in confirmed asthma, the viscera were sometimes found *sound.* The truth of this statement is confirmed by the experience of Laennec, and other modern anatomists.

The principal appearance which has been noticed is an emphysematous condition of the lung. The air-cells are dilated, sometimes with rupture, and consequent union of several into vesicles of considerable size. Pulmonary emphysema may be confined to a small portion, or it may occupy the greater part of one or both lungs. It probably depends upon pressure exerted on the lungs during those forcible expirations which are made when there is obstruction to the free passage of the air.

Treatment.—The treatment of asthma naturally divides itself, like that of agues, into the two great heads of palliative and radical; or into that which is to be pursued during the fit, and in the interval. The relative importance of these was long misunderstood. Dr. Cullen distinctly says, that asthma is seldom cured, though it admits of alleviation. Dr. Bree, on the other hand, has shown that the paroxysm of asthma is susceptible of but little relief, and that the main object of medical treatment is to prevent the recurrence of fits, and thus to effect a *permanent* cure of the disease.

1. *During the fit.*—The indications of cure during the paroxysm are to lessen the distension of the blood-vessels of the lungs, and to promote expectoration. It might be supposed that the first object would at once be gained by the abstraction

of blood, and the relief so commonly afforded by bleeding in most forms of thoracic disease gives countenance to such an expectation. But experience has shown that this evacuation scarcely ever shortens the paroxysm; while on the other hand it delays expectoration, aggravates the subsequent dyspnœa, and increases that debility which is the great obstacle to a speedy and ultimate cure. In place of blood-letting we are to relax the spasm, and unload the vessels by the combined influence of nauseant expectorants, acids, and narcotics.

Where the stomach is much loaded (as when the paroxysm occurs soon after a full meal), we may begin by directing the following gentle emetic:—

℞ Pulveris ipecacuanhæ, gr. xv.
Aceti scillæ, ʒj.
Aquæ menthæ sativæ, ℥j. Misce.
Fiat haustus emeticus.

Under common circumstances it will, however, be sufficient to keep up a degree of nausea, for which the following draught is well adapted:—

℞ Pulveris ipecacuanhæ, gr. iij.
Aceti destillati, ʒiij.
Aquæ menthæ pulegii, ʒvj. Misce.
Fiat haustus quartis horis ad quartam vicem repetendus.

Sir John Floyer's specific in the asthmatic paroxysm was the vinegar of squill, and it is certainly a valuable medicine. If there be reason to suspect acidity in the stomach, an absorbent may be substituted for the acid, as thus:—

℞ Cretæ preparatæ, gr. x.
Pulveris ipecacuanhæ, gr. iij.
Aquæ menthæ sativæ, ʒx. Misce.
Fiat haustus tertia quaque hora repetendus.

The patient should, further, be directed to take at intervals clear coffee, which, as an article of diet, is peculiarly well adapted to the stomach of an asthmatic. On the second or third day, when the tendency to secretion has increased, some anodyne may be added to the expectorant, and the effect of the whole is much aided by the gentle stimulus of an acid. The following formula is constructed upon these principles:—

In the [illegible] of the [illegible] [illegible] [illegible] [illegible] [illegible] of the [illegible] [illegible] [illegible] [illegible] [illegible] of the lungs, [illegible] to promote the strength of the stomach and general system. To enter upon such a plan with any prospect of success, co-operation on the part of the patient is indispensable. His health is in a great measure in his own hands.

Abstinence from what is hurtful rests alone with him, and this can never be compensated by the prescriptions of his physician. To *aid* the efforts of the asthmatic, preparations of iron, bitters, and the mineral acids, may be advised. A tea-spoonful of the carbonate of iron may be given three times a day. Dr. Bree recommends the following formula:—

℞ Carbonatis ferri, ℥iss.
Rhei pulveris, ℈j.
Olei anthemidis, ♏v.
Fiat massula, ope conservæ rosæ, in pilulas viginti æquales dividenda.

Of these pills two may be taken twice a day, followed by a draught composed of two ounces of a weak infusion of ginger or camomile, with fifteen drops of the elixir of vitriol.

Cold bathing, daily regular exercise, and, where possible, frequent changes of air, of scene, and of amusement, are of real importance. Above all things, attention is to be paid to the regulation of diet. Light and simple food is to be preferred, and always taken in moderation. With this precaution many confirmed asthmatics pass through life in comparative comfort. When the disease is inveterate, the only chance of permanent cure rests in a complete change in all the habits of life, and in Dr. Bree's work* there is recorded a splendid example of what may be effected by such a measure steadily pursued.

CHAP. III.

HOOPING-COUGH.

On Cough as a Symptom of Thoracic disease. Early notices concerning Hooping-Cough. Manner of its invasion. Progress of the disease. Prognosis. Modes by which it proves fatal. Propagation by specific contagion. Nature of the affection. Principles of treatment. Remarks on the administration of different remedies. Influence of change of air.

Cough and difficult breathing are the leading symptoms of thoracic disease, whether acute or chronic; but they occur in such very different forms, they are so infinitely diversified in their combinations with each other, and with other local and general symptoms of disease of the chest, in their periods of occurrence and duration, and in the degree of their violence, that no inconsiderable difficulty is experienced in forming a true estimate of their bearing in particular cases. This position I attempted to illustrate in the last chapter, when treating of dyspnœa. It again meets us in our inquiries concerning the nature and varieties of *chronic cough*.

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* Inquiry into disordered Respiration, p. 347.

The pathology of cough is much simpler than that of difficult breathing. It always depends upon some morbid condition of the mucous expansion of the lungs and air-passages. This may be either a præternatural *dryness* of the membrane, by which it is rendered unusually susceptible to the stimulus of dust, of vapours, or of a cold moist air;—or, secondly, inflammation and its consequences; or what approaches very near to it, the state of vascular congestion;—or, lastly, it may be some poison circulating in the system, and possessing, from circumstances unknown, a peculiar disposition to affect the bronchial membrane. Cough, as arising from the first of these sources, has been already discussed under the title of *subacute* and *chronic* bronchitis. It now remains, that I consider chronic cough as it arises *idiopathically* from unknown, or at least very obscure causes. This singular variety of disease, prevailing chiefly among infants and children, is well known to the world under the title of *hooping-cough*, and from nosologists it has received the name of pertussis.

PERTUSSIS.

Hooping-cough is not described by any of the Greek, Roman, or Arabian authors. It is impossible to suppose that a disease so strongly marked as this, could have escaped the attention of the ancient physicians, had it then existed. We must presume, therefore, that it was not known in Europe, before the thirteenth, or perhaps even the fourteenth century. It was first accurately described by Dr. Willis* in 1664. The most complete treatise on the disease which has since appeared is that of Dr. Watt, of Glasgow,† in which the student will find a copious account of the opinions of the best authors.

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* Pathologia Cerebri et Nervosi Generis, cap. 12.

† Treatise on the Nature, History, and Treatment of Chincough, 1813.

Symptoms.—Hooping-cough begins with the common symptoms of catarrh, from which indeed it cannot be distinguished by any known criterion for the first week. It has been observed, that the usual catarrhal symptoms are here accompanied with a more than ordinary disposition to sleep, and those which denote general fever are seldom very strongly marked. About the end of the second, or beginning of the third week, the symptoms undergo a remarkable change. The fever declines, and appetite returns; but the cough continues in paroxysms of extraordinary violence. The child struggles for breath, and appears in danger of suffocation until relieved by the long and full inspiration known under the name of the *back draught*, or hoop. The fit of coughing continues for several minutes, and is commonly terminated by expectoration of mucus, sometimes by vomiting, and occasionally by bleeding at the nose, or an epileptic paroxysm. In very bad cases even this relief is denied to the little patient, whose efforts end only with his complete exhaustion. It is distressing to witness the attempts made to expectorate. The child appears conscious of the benefit thus afforded to him, and continues coughing until expectoration is effected.

The fits vary much in frequency. In mild cases they do not occur more than three or four times a day. In severe ones, they harass the patient every half hour. It is very rare to find them recurring at regular intervals. They are often brought on by exertions of body, or emotions of mind. It is common, therefore, to find the child averse from moving or speaking. He is often aware of the approach of the fit, and lays hold of any thing near him for support. He finds relief by stooping forward, and by support given to the head and back.

When once the disease has assumed its regular form, the appetite is good; and this is strikingly displayed in the craving for food, which comes on when the fit terminates by vomiting. The tongue is *clean and moist.* There is no difficulty of breathing in the intervals of the fit. Permanent dyspnœa betokens something more than mere hooping-cough; either an inflammatory condition of the bronchial membrane, or a gorged state of the substance of the lungs. The bowels are seldom affected. It is very common to find children with hooping-cough complaining of a *tensive* pain of the forehead, and in severe cases this is obviously an *urgent* symptom, and one which demands attention in reference to practice.

Progress and termination.—The further progress and duration of hooping-cough are subject to great variety. In its mildest form it generally last two or three months; and when severe, is often protracted to six or seven. Even after it has wholly ceased, or nearly so, an accidental exposure to cold has occasioned its return. Under the most favourable circumstances the decline of the disease is very gradual, and almost imperceptible. It happens, however, but too frequently, that the latter stages of the disease are attended with a formidable train of evils. In some cases a convulsion fit occurs in one of the paroxysms, and carries off the patient when the practitioner is least prepared for it; or genuine hydrocephalus gradually supervenes, and the child dies in a state of coma. This might oftener be anticipated, when we reflect with what force the blood is driven upon the brain, and how much its return is retarded, during a severe fit of coughing. In other cases, from exposure to cold, pneumonic symptoms supervene, and the child either dies with his lungs gorged with blood, or the foundation is laid for a species of infantile phthisis. The last of the modes by which hooping-cough proves fatal, is that by *marasmus and infantile fever.* The child, after a continuance of the disease for a certain time, from causes not well understood, loses his appetite, emaciates rapidly, becomes hectic, and dies, *apparently* from pure exhaustion. The deaths by hooping-cough recorded in the London bills of mortality are always very numerous, averaging not less than five hundred annually.

The danger is not proportioned to the age of the patient. A child of two or three *months* old will struggle through the complaint as well as another of two or three years. When it attacks weakly or scrophulous children, or those labouring under some other disease, it is apt to prove severe, tedious, and therefore dangerous. When hooping-cough begins late in the spring, it is commonly milder than when its approach is towards the beginning of winter. It is always most destructive in cold climates, and in cold and damp seasons.

Morbid appearances.—The appearances on dissection correspond with the views which have been given of the modes by which this disease proves fatal. Dr. Watt has described several cases in which were found the clearest proofs of acute bronchial inflammation, conjoined with more or less *congestion* in the substance of the lungs. In some which have been recorded, serous effusion within the ventricles of the brain has been the predominant morbid appearance; while to myself and to many others it has occurred to witness numerous instances, in which, on examination, nothing preternatural has been observed in either of the three great cavities of the body.

Causes.—Hooping-cough, though sometimes met with in adults, is for the most part the disease of early life. It is often epidemic. Few children escape it; but it rarely, if ever, is known to occur more than once in the course of life. From these and other facts which might be adduced, a reasonable presumption exists, that it has its origin in a *specific contagion*, which, like that of the measles, has a direct determination to the membrane of the bronchia, though it is not, like it, essentially linked to fever. The contagion of hooping-cough appears to be communicated with great facility. When once it gets entrance into a family, it generally attacks every child. The latent period of its miasm is not ascertained.

Nature.—Different opinions have been entertained regarding the precise nature of hooping-cough. It was originally considered as a spasmodic disease, allied in its more obvious features to asthma and chorea, but acknowledging also many of the laws of convulsive diseases generally. This simple and very satisfactory explanation has latterly been called in question; and the notion has prevailed, that hooping-cough is an affection of an inflammatory kind, closely allied to the ordinary varieties of bronchitis. In favour of this opinion it has been argued—1. That common winter cough frequently shows a strong disposition to spasmodic exacerbation; 2. That all the more important *sequelæ* of hooping-cough are of a decidedly inflammatory character; and, 3. That an inflammatory affection of the mucous membrane of the tonsils (cynanche maligna) is induced by the operation of a specific contagion. These facts point out a strong *tendency* in the disease to inflammation, which the practitioner will do well to keep in view; but an impartial observer will duly appreciate those more numerous considerations which associate it with the class of spasmodic diseases; viz.—1. The recurrence in paroxysms; 2. The absence of fever; 3. The appearances on dissection; 4. The effects of remedies. In no way is such a view of the nature of hooping-cough more strongly confirmed than by observing the infinite number of presumed *specifics* for the cure of the complaint. That all of them have been at times serviceable it would be in vain to deny, and such facts are reconcileable only with the notion of the disease being essentially of a spasmodic nature.

Treatment.—The leading principles to be kept in view in the treatment of hooping-cough are the following:—It is a disease arising from a specific contagion, over which we have no direct control. Like small-pox or measles, it has a tendency to run a certain course, and in time to wear itself out. The violence of the paroxysms may sometimes be moderated by remedies which diminish irritability generally, and which prove useful in other spasmodic disorders. On the other hand it is to be remembered, that hooping-cough occurs at a period of life peculiarly favourable to the lighting up of fever, and to the engendering local determinations of blood. On this account a watchful eye must always be kept on the accompanying constitutional symptoms, and antiphlogistic measures adopted in proportion to their violence.

As to the alleged specifics in hooping-cough, I need not do more than simply enumerate them. Their very number is a satisfactory proof that no single remedy is of much service. They are, cantharides, cochineal, paregoric elixir, assafœtida, castor, bark, cupmoss, musk (natural and artificial), nitre, arsenic, and prussic acid. Without detaining the reader by a detail of the relative merits of these drugs, I shall at once proceed to offer a few remarks on those means of more acknowledged power which have been sanctioned by long and general use; such as emetics, narcotics, expectorants, stimulant embrocations, laxatives, mercurial alteratives, local and general depletion, and change of air.

1. Emetics were probably first employed from its being observed that vomiting is one of the common terminations of the paroxysm, and that children who vomit commonly pass through the disease easily. There is a great difference, however, between natural vomiting and that which is the result of

an irritating medicine, such as tartar emetic. It will be found in practice, that *frequent* emetics, from their tendency to weaken the stomach, are inadmissible; but the occasional exhibition of a few grains of ipecacuanha, with chalk, may safely be directed:—

℞ Pulveris ipecacuanhæ, gr. iij.
Cretæ præparatæ, gr. vj. Misce.

2. When the disease has subsisted for any length of time, the mild narcotics are decidedly useful. Dr. Butter[*] recommends very strongly the extr. conii, which may be given according to the following form:—

℞ Extracti conii, gr. iij.
Magnesiæ sulphatis, ℈j.
Aquæ carui, ʒv.
Syrupi rhæados, ʒj. Misce.
Fiat haustus ter indies sumendus.

Other practitioners have found advantage from hyoscyamus, and the lactuca virosa. Opium for the most part confines the bowels, and makes the child feverish.

3. Expectorant medicines, of several kinds, have been tried, and occasionally have proved singularly beneficial. Dr. Richard Pearson[†] has spoken in high terms of the combined influence of an expectorant (the vinum ipecacuanhæ) with an anodyne and absorbent. He strongly recommends the following formula:—

℞ Sodæ subcarbonatis, gr. xxiv.
Vini ipecacuanhæ, ʒj.
Tincturæ opii, ♏vj.
Syrupi, ʒiij.
Aquæ puræ, ℥j. Misce.
Sumat partem sextam sexta quaque hora.

4. Stimulant embrocations enjoy a high reputation for the relief of hooping-cough. They should be applied not only to the chest, but along the course of the spine; and the milder kinds may be repeated frequently during the day. Tartarized antimony, and the oleum succini, are among the most approved

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[*] Treatise on the Kin-Cough.

[†] Medico-Chirurgical Transactions, vol. i. page 23.

ingredients in such applications. They may be prepared for use in the following manner:—

℞ Antimonii tartarizati, ℈ij.
Tincturæ cantharidis, ʒj.
Aquæ rosæ (calidæ), ℥ij.
Solve antim. tartariz. in aqua rosæ, dein adjice tincturam.

℞ Linimenti saponis compositi, ℥jss.
Olei succini, ʒss. Misce.

5. An open state of the bowels is almost essential to the favourable progress of the disease. An occasional dose of rhubarb is very necessary, and much advantage is derived from its combination with the carbonate of potash or soda. Dr. R. Pearson has observed, that the slimy fluid brought up by vomiting has often a sour smell.

6. In the latter stages of hooping-cough, where it becomes combined with symptoms of marasmus, I have seen great benefit derived from small alterative doses of calomel (a grain twice a day with a little sugar), and to this may be united very advantageously a few grains of scammony.

7. In all severe cases, when the cough is accompanied with permanent dyspnœa, much heat of skin, and other febrile symptoms, general or local blood-letting ought never to be omitted. It is frequently necessary to repeat the evacuation of blood two or three times before the symptoms yield. When the child complains of much head-ache, it will be right to apply a few leeches to the head. It has been observed, that the severity of the *hoop* has been by this means diminished.

8. When the disease proves very tedious and obstinate, resisting all the common modes of relief, and exhausting the patient by its continuance, we presume that it has rooted itself in the system by the force of habit; and to break in upon this, change of air has long been found eminently beneficial. It is often the only thing that gives the patient a chance for life. But it must be remembered in what circumstances it is applicable, and should never be advised where symptoms of bronchial inflammation are present, which a free exposure to cold air would in all probability aggravate.

CHAP. IV.

SYNCOPE AND PALPITATION.

Functional Disturbances of the Heart's action. Of Syncope. Its Causes and Mode of Treatment. Of Palpitation. Its several Causes. Diagnosis of Nervous Palpitation from Organic Disease of the Heart. Treatment of the Nervous Palpitation.

The heart is liable to various disturbances of its function, independent of organic disease. We have seen, for instance, in fever, how its movements are accelerated. In some cases of pressure upon the cerebral substance, the motions of the heart are retarded. The same effect is produced by digitalis.

There are two functional disturbances of the heart's action so frequent, and so important in practice, as to have been considered by all nosologists entitled to rank as distinct diseases. The first is temporary cessation of the heart's action, called by pathologists syncope: the other is increase of the heart's action, often with irregularity;—this is called palpitation. To these two conditions of disease my attention will be directed in this chapter.

I. SYNCOPE.

Syncope, or fainting, consists in the temporary suspension of the functions of the heart, and consequently of every other function of the body. Though commonly considered as an affection of the heart, it is in strict pathology a disease of the brain and nervous system.

Phenomena of the fainting fit.—A dimness comes before the eyes; a deadly paleness overspreads the cheeks; the patient falls down; the pulse fails; respiration is at a stand; sensation and all mental phenomena cease. In some cases, indeed, the patient, though incapable of speaking, retains enough of perception and sensation to be conscious of his own disorder, and of what is passing around him. The disease brings with it its own cure. The horizontal position to which it reduces the body quickly renews the supply of blood to the heart, and the fit of syncope is over. In a few cases, recovery is accompanied with a confusion of ideas, vertigo, and headache. Much more frequently it is described as being attended with very *painful* feelings. Vomiting frequently occurs during the state of faintishness, especially in that brought on by copious bleeding. By exciting the circulation, vomiting contributes essentially to the recovery of the patient. Fainting, viewed in the light of a *disease*, must always from its very nature terminate favourably. I shall have occasion, indeed, in a subsequent chapter, to speak of death by *syncope*, that is, of a sudden and *permanent* check given to the heart's action; but to such a state, the term fainting, in its common acceptation, is obviously inapplicable.

Nosologists have attempted to distinguish different degrees of swooning, to which they have applied the terms of leipothymia, leipopsychia, echysis, syncope, and apopsychia; but there are certainly no real grounds in nature for any such distinctions. Syncope may be considered, in a pathological point of view, as arising from two different sources,—imperfect supply of blood to the heart, and defect of nervous power: and in one or both of these ways it will be easy to understand the operation of the several predisposing and exciting causes of fainting, which systematic writers have enumerated.

Predisposition.—A predisposition to fainting is given by original delicacy of organization. Hence it is so much more frequent among women than men. Weakness of constitution, the result of long illnesses, or of scanty nourishment, may be viewed in the same light. In convalescents from typhoid fevers, the exertion of getting out of bed is often followed by a fit of syncope.

Exciting causes.—The most common exciting causes of a fainting fit in persons otherwise in good health are, violent and long-continued exertion, long continuance in the erect position, violent and protracted pain, excessive evacuations, whether of blood or by purging, external heat, the sudden operation of a depressing passion, and, in very delicate habits of body, certain objects of dread and antipathy.

Treatment.—The treatment applicable to the state of syncope is very obvious and simple, and, excepting in the case of syncope from flooding, rarely, if ever, demands the exercise of professional skill. The horizontal posture, a free current of cold air, sprinkling a little cold water over the face, and hartshorn held to the nostrils, will be sufficient to re-excite the circulation in common cases. In those severe cases which are the consequence of excessive evacuations of blood, the most powerful stimulants (ether and brandy) are often required, and an unremitting perseverance in them can alone ensure the safety of the patient.

II. PALPITATION.

There are few sensations better known, and which create at the same time more uneasiness, than that to which the term palpitation is popularly applied; and it is not therefore surprising that pathologists should have directed so large a share of their attention towards it. By some it has been advanced to the rank of an *idiopathic* affection, and considered in the light of a *convulsion*. By others, and certainly with more justice, it is viewed merely as a symptom, arising from various causes, sometimes quite unimportant, but sometimes indicating, in conjunction with other symptoms, disease in different parts. A few observations on the nature and sources of palpitation may be of some assistance to the student, with a view to the diagnosis of disease and the administration of remedies.

In a state of health, and even in many forms of disease, such as fever, the movements of the heart take place imperceptibly. When they are, from any cause, so far increased in violence as to become perceptible to the individual, he is said to have *palpitation*. Such irregular action may be either sharp and strong, when it is called *throbbing* of the heart; or it may be soft and feeble, when it is called a *fluttering*. The sensations of the patient are obviously to be ascribed to the rebound of the heart against the inside of the chest. With a view to practice, a distinction is to be drawn between *permanent* and *occasional* palpitation. The former is always, or nearly always, the result of organic disease existing within the chest, more especially of the enlarged or hypertrophied condition of the heart. The latter also may sometimes indicate structural derangement, but it is far more commonly the evidence merely of *sympathetic* disturbance in the action of the heart. To that variety of palpitation which occurs with perfect integrity of the heart's structure, the term nervous has been usually appropriated, and to it I confine my attention for the present.

Causes of palpitation.—1. Every one must be sensible of the influence of strong emotions and passions of the mind over the actions of the heart; and palpitation from this source is very frequent. Dr. Cullen entertained the idea that it arose from the too rapid influx of nervous power into the muscular fibres of the heart; but this notion is too hypothetical to require discussion. Palpitation is frequently observed in persons of *irritable* habit, and is often connected with amenorrhœa, chlorosis, and hysteria, of which latter disease the *animus varius et mutabilis* constitutes so striking a feature.

2. Palpitation is owing, secondly, to *a plethoric* state of the body, the heart labouring in its functions from over-distension of its cavities; and sometimes to preternatural increase in the velocity of the blood, without augmented bulk, as where it is brought on by violent exercise.

3. It arises thirdly, from sympathy of the heart with a deranged condition of the abdominal viscera, and consequently is a frequent symptom of dyspepsia, constipation, and diseased liver. It is hardly consistent with sound pathology to attempt any more *precise* explanation of this phenomenon, than what the term *nervous sympathy* suggests.

4. The last proximate cause of palpitation to which I shall allude is *weakness* of the heart's action. It frequently occurs in young men of studious habits, who have impaired their general health by want of due exercise, by mental anxiety, and by continuing their exertions of thought so far as to break in upon their natural hours of rest and recreation. It seems to be a law of the human economy, that debility in the exercise of any function often produces temporary efforts at more vigorous exertion, and commonly in a convulsive manner. Hence it is that syncope and palpitation are so often associated together.

Diagnosis.—Nothing is more necessary in actual practice than to distinguish carefully between simple nervous palpitation and the organic lesion of the heart (hypertrophy), for which the anxious mind of the patient so often and so causelessly mistakes it. In both affections the heart is felt tumbling irregularly in the chest, and a violent impetus is given to its parietes. But in the nervous palpitation, the impulse is confined to the proper region of the heart. It neither extends to the back, nor to the right side. It is unaccompanied with swelled legs, dropsy, or lividity of lips. If the complaint occur in young women, the pale, bloodless chlorotic aspect of the countenance will contribute to fix the nature of the disease. An accurate diagnosis in this case not only relieves the mind from much painful anxiety, but it prevents the adoption of measures which might have added fuel to the flame. In hypertrophied heart the patient is to be put on a restricted diet, and to be debarred from severe exercise. In the palpitations of irritable females and anxious students, horse exercise and an allowance of wine are measures of the first importance.

Treatment.—An affection arising from such various and even opposite causes must be met by measures adapted to the particular circumstances of each case. When plethora is present, and the heart labours in its functions from excess of duty, the loss of a moderate quantity of blood will give temporary relief, and form a fit prelude for other and more lasting depletory measures, especially low diet, purgatives, and nauseants. In by far the larger proportion of cases, however, the habit of body in which palpitation occurs is that of weakness, atony, and irritability. The system of management, therefore, here must be essentially *tonic.* The diet should be nourishing without being stimulating. Moderate exercise in the open air should be directed. The bowels are to be relieved by warm aperients, such as the compound decoction of aloes. Long continued study is to be exchanged for cheerful amusement. The general habit is to be strengthened by quinine and chalybeates.

Such measures, steadily pursued, may effect a cure, even in cases of great obstinacy, but they must often be continued for one or two years before the heart completely regains its tone.

CHAP. V.

ORGANIC DISEASES OF THE HEART.

Chronic diseases of the Heart connected with alteration of its structure. Angina Pectoris. Its symptoms, progress, and termination. Morbid appearances. Pathology. Treatment. Enlargement of the Heart. Simple Dilatation. Its general and external signs. Hypertrophy. Its general and external signs. Diagnosis of its several species. Prognosis. Causes of enlarged heart. Treatment. Of Valvular disease of the heart. Diagnosis of the several varieties of valvular disease. Prognosis. Pathology of valvular disease. Treatment. Congenital malformations of the heart. Symptoms occasioned by them. Cyanosis, or blue disease. Aneurism of the thoracic Aorta.

IN a preceding chapter (page 265) an attempt was made to arrange the several diseases of the heart which are connected with alteration in its complicated structure. On that occasion the inflammatory affection of its surface was considered, together with its consequence, adhesion of the heart to the pericardium. I now proceed to describe those organic diseases of the heart which are not usually associated with fever. They may be thus enumerated. 1. Affections of the Parietes of the heart; viz. Ossification, leading to Angina Pectoris, Dilatation, and Hypertrophy. 2. Affections of the interior of the heart—Polypi, Valvular Diseases, and Malformations. A few observations may follow on Aneurism of the Thoracic Aorta.

ANGINA PECTORIS.

To a disease exhibiting many uniform and characteristic symptoms, and usually considered as depending on some chronic structural derangement in the heart, Dr. Heberden, in 1768, gave the name of angina pectoris.* Dr. Parry, of Bath, has treated of it fully, under the title of syncope anginosa.† In Dr. Cullen's nosology it has received no place, although it might readily have found one next to asthma, to which, in many of its characters, it bears a strong analogy. Modern writers have added but little to the observations of the distinguished author who first described this disease.

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* Transactions of the London College of Physicians, vol. ii. page 59. "Some Account of a Disorder of the Breast." By Dr. Heberden.

† Inquiry into the Symptoms and Causes of the Syncope Anginosa. 1799.

Symptoms.—Angina pectoris, or neuralgia pectoris, as it might more properly be called, consists of repeated paroxysms of violent pain or uneasiness about the chest, occurring principally when the patient is walking up hill, or against the wind. The feeling of pain is so acute as to make him instantly stand still, and even to give the apprehension of immediate death. It is referred to the sternum a little inclined to the left side, from which point it shoots across the breast to the left arm, and appears to terminate at the elbow. In some cases it extends to the right breast, and passes down the right arm in a similar manner. At first the paroxysms do not last more than a few minutes, and occur only at long intervals. Gradually they lengthen, and recur with increased frequency; being brought on, not only when the patient is walking, but when sitting or lying down, and by the slightest bodily exertions, or even anxiety of mind. In many cases they are brought on by taking food, or the accidental distension of the stomach by wind.

The duration of the paroxysm has been, in some very severe cases, protracted to half an hour or more, the face and extremities becoming pale and bathed in a cold sweat, and the patient, for a while perhaps, deprived of the power of sense and voluntary motion. The character of the pulse during the fit is apparently subject to considerable variety. Dr. Heberden found it sometimes, though far from uniformly, affected. Dr. Fothergill reports, that in his cases it was commonly intermitting or irregular. There is always some difficulty of breathing, or at least a distressing sense of *suffocation*, present at the same time; and in the advanced periods of the disease the stomach becomes unusually irritable.

Prognosis and Diagnosis.—Angina pectoris has been known to last for many years; yet the prognosis is very unfavourable. In the larger proportion of cases it proves fatal *suddenly*, giving rise to the suspicion that apoplexy has taken place, or that the heart itself has given way, but which upon dissection nothing will appear to corroborate. The diagnosis has often been looked upon as a matter of considerable difficulty, but I think without sufficient reason. Angina pectoris derives its character from a remarkable group of symptoms present during life, and not from any appearances found after death; and if the former are observed, the disease is at once entitled to such a denomination.

Morbid anatomy.—Dr. Parry has the merit of first connecting the symptoms usually known by the name of angina pectoris, with an ossified state of the coronary arteries of the heart. Subsequent experience has shown that this important principle in pathology is fairly admissible, though subject to modifications and exceptions. In some cases the aorta has been found ossified or dilated; in others the valvular structures of the heart have been implicated in the disease. Nothing, however, tends to obscure this subject more than observing that in many cases (and very remarkably in that described by Mr. H. Watson*) a most extensive ossification of the coronary arteries existed, without giving rise to a single symptom of thoracic disease.

Dr. Latham, in an interesting communication to the London College of Physicians,† has described two cases of enlarged liver, in which all the genuine symptoms of angina pectoris were observed. Both patients died suddenly. But further, this disease has proved fatal where the most accurate anatomists have failed in detecting any morbid alteration of structure; and it has been observed, during life, in combination with certain other symptoms denoting general constitutional disturbance—such as are sometimes designated by the title of *flying gout.* Upon the whole, therefore, we must conclude, that angina pectoris, though associated in so large a proportion of cases with structural disease, especially ossification of the parietes, of the heart, as fairly to claim for itself the title of a disease of the heart, may still arise from other sources, and possibly may have for its proximate cause some condition of the thoracic nerves which has hitherto eluded observation.

Causes.—Angina pectoris prevails more frequently in men than women. It is met with exclusively in the middle and advanced periods of life. It is more frequent among persons in easy circumstances than in the labouring classes. It seems to have some ill-defined connexion with the gouty diathesis. The nature of that action of the vessels which precedes the ossific deposition is not well understood. Some pathologists believe it to be chronic inflammation. Others consider the deposit of bone to be owing to those changes which time alone works in the human body.

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* Medical Communications, vol. i. page 234.

† College Transactions, vol. iv. page 278. "Observations on the Angina Pectoris notha."

Treatment.—The objects of medical treatment in this affection are limited to affording some degree of relief while the paroxysm is actually present, and to the avoiding as far as possible all those circumstances which occasion its renewal. With a view to immediate relief we have recourse to a small blood-letting, carminative draughts, and opiates. The more important object of preventing the gradual inroads of the disease upon the constitution, is to be attempted by strict attention to diet and regimen, the regular use of aromatic laxatives, and the insertion of an issue or seton. All practitioners agree in the benefit which is derived from using the lightest and most digestible food, with perfect abstinence from fermented and spirituous liquors. Even in the latter periods of a protracted paroxysm, when the prostration of strength appears extreme, we should hesitate in giving wine and cordials. The heart is here oppressed, not weakened.

Anything that hurries the circulation is sufficient to bring on a paroxysm. The patient should be therefore cautioned to keep his mind quiet, and to refrain from all severe exercise. Flatus in the stomach and a torpid state of the bowels are so commonly found accompanying this disease, and either inducing or aggravating paroxysms of it, that the practitioner will do well to obviate, by the use of aromatics, bitters, and laxatives, any irregularity in the action of the chylopoietic viscera, which he may observe. Where sleep is interrupted, he may with propriety exhibit some narcotic—the extract of hyoscyamus for instance, or opium. Dr. Heberden says, that he has known opiates given at night, in many instances, prevent the accession of a paroxysm.

ENLARGEMENT OF THE HEART.

The minute investigations of modern pathologists have pointed out several varieties of enlarged heart, of which the following is an outline:—First, uniform dilatation of one or more of the cavities of the heart, its muscular parietes remaining of their natural thickness. This is called *simple dilatation.* Secondly, dilatation with *attenuation* of the walls of the heart.

Thirdly, thickening of the muscular and cellular substance of the heart, its cavities remaining little if at all more capacious than usual. This is called simple hypertrophy of the heart. Fourthly, hypertrophy co-existing with dilatation. Lastly, hypertrophy leading to *contraction* of one or more of the cavities of the heart. The most frequent of these conditions of enlarged heart is the fourth—hypertrophy with dilatation.

Each of these varieties of enlarged heart may affect both sides of the heart and all its four cavities, either simultaneously or in succession; or the enlargement may be confined to one side. It has long been known that the left side is more especially prone to enlargement. Again, enlargement may affect one or both ventricles, or one or both auricles. From this statement it will be seen, how widely the subject expands when minutely investigated. Its extent indeed is almost boundless. In an elementary work, however, it does not seem either necessary or desirable to enter into the details which would be necessary to render all its parts intelligible. I shall content myself therefore with a few observations on the diagnostic marks of the two elementary states—dilatation and hypertrophy.

Simple dilatation.—This state of disorganized heart is attended with a sense of oppression about the chest, often called palpitation. The pulse is full, slow, soft, but occasionally small and almost imperceptible. There is no forcible beat or *impetus* against the parietes of the chest, but the sound of the heart's action may be heard over an extent of surface much larger than in health. The effect of dilatation is to enfeeble the heart's action, and thus gradually to bring on the usual results of languid and obstructed circulation. Of these the most remarkable are cold extremities, general languor and hebetude, congestion of the liver, dyspnœa, œdema of the cellular tissue of the lungs, cough and expectoration of thin mucus, turgescence of the external jugular veins (especially observed in dilatation of the right side of the heart); and, towards the last, those more formidable evidences of obstructed circulation through the lungs, passive hæmoptysis, lividity of countenance, coma, and dropsical accumulations in the pleura, pericardium, and cellular tissue generally.

HYPERTROPHY OF THE HEART.

The size which the heart attains in some cases when not only its parietes are thickened, but its cavities are severally enlarged; is quite astonishing. It may attain a volume, two, three, or even four times greater than its natural bulk. In this case its very form changes. From being oblong, it becomes spherical, and its apex is scarcely distinguishable. The train of symptoms which flow from an hypertrophied heart may thus be enumerated, the student bearing in mind that the co-existence of dilatation, when not excessive, does not materially influence their character or intensity.

Symptoms.—There is strong palpitation. The heart beats with violence against the sides of the chest, and if the increase of bulk has been considerable, the action of the heart will be perceptible over a large extent of surface. There is dulness of sound over the præcordial region, the heart occupying the space which ought to be occupied by the lung. When the ear is applied to the chest an *impulse* is given, which is the great characteristic of hypertrophy. In aggravated cases, when the patient is examined, even in his calmest moments, his head and limbs will be seen to shake, and the whole frame to vibrate with the systole and diastole of the heart. The pulsation of the carotid, temporal, and radial arteries is often perceptible to the eye. The pulse is full, strong, and jarring. Under bodily or mental excitement these symptoms are of course aggravated. Respiration labours. There is dyspnœa, aggravated by the slightest exertion of body, or any strong emotion of mind. To a person so affected, the climbing of a flight of stairs, or the ascent of a hill, are insurmountable obstacles. The patient complains of a rush of blood to the head on stooping. His sleep is disturbed by dreams of headlong precipices and rushing waters, of quick pursuit, and impossible escape.

When hypertrophy has reached a certain point, it makes rapid inroads upon the constitution, impairing the function, or injuring the texture, of one or more of the viscera, according to the habits or idiosyncracies of the individual. In many cases the brain suffers. A lethargic disposition is first observed, which ultimately ends in perfect apoplexy, with rupture of some bloodvessel in the head. At another time the lungs are gorged with blood, and the patient suffers from paroxysms of asthma. In a third set of cases there is dropsy, assuming generally the form of anasarca, but complicated occasionally with ascites and hydrothorax.

Diagnosis of the several species of hypertrophied heart.—Much may be done, by careful attention to the situation and character of the sounds of the heart, towards determining the precise portion of it which is the seat of hypertrophy. When the right side of the heart is affected, the impetus will be felt chiefly near the sternum. When the left side is diseased, the ribs, near their angle, will receive the largest share of impulse. The precise *period* of the impulse, with reference to the pulse, will also furnish valuable aid to minute diagnosis, but a nice habit of discrimination is required in these investigations, which long experience only can give. The determination of these points is, after all, more a matter of curiosity and scientific interest than of practical utility.

Prognosis.—Hypertrophy of the heart, though sometimes a severe disease, attended with the formidable consequences already noticed, and poisoning every source of enjoyment in life, is occasionally productive of very little inconvenience. This happens more especially when the enlargement of the heart is simple, that is, uncombined with any affection of the valves. I have known a person, with a heart greatly enlarged, to join in the active sports of the chase. With careful attention to diet and to moderation in exercise, a person with enlarged heart may pass a long series of years, and even attain a good old age, without serious inconvenience. But intemperance in living, inordinate exercise, and irregular habits, are sure, sooner or later, to augment the disease to that point, when other organs become involved. There are three modes by which hypertrophy of the heart proves fatal:—1. By engorgement of the head or lungs, producing ultimately rupture of some bloodvessel. 2. By dropsical accumulations in the chest, occasioning death by suffocation. 3. By supervening pericarditis. The sufferings of the patient under this complication of evils are excessive and protracted; and the last hours of life more full of anguish than in any other known disease.

Causes of enlarged heart.—Enlargements of the heart, whether of the dilated or hypertrophied kind, arise from the same causes. These are very numerous, and have recently excited a large share of the attention of pathologists.. The subject, however, still requires much elucidation. I shall enumerate those which appear to be of the most importance.

1. A disposition to enlargement of the heart is in many cases

constitutional. It will be perceived at a very early period of life. I have known it at seven years of age. It exists in particular families, and in some it accompanies and forms part of the scrophulous or consumptive habit.

2. Enlargement of the heart may be traced, in many cases, to excess in eating and drinking, more especially to inordinate indulgence in ale, porter, and distilled spirits. Sailors and stage-coachmen are often the subjects of it. A plethoric state of body is thus produced, blood is formed beyond the wants of the system, and the heart expands to accommodate itself to the excess. Perhaps, too, the constant excitement kept up in the circulation by spirituous liquors may be the efficient cause of the augmented bulk and capacity of its most important organ.

3. Enlargement of the heart frequently has its origin in an inflammatory state of the organ generally, but more especially of the pericardium. Hence it is that hypertrophy is so frequently met with in those who have suffered from repeated attacks of acute rheumatic fever. The adhesions which inflammation leaves between the heart and its capsule interfere with the free motions of the heart, and ultimately occasion its morbid growth.

4. Enlargements of the heart, especially its hypertrophied state, are occasioned by valvular or other obstructions to the due egress of blood *from* the heart. To overcome the mechanical obstacle thus raised to the free passage of the blood, the heart is compelled to increased effort; and this, by a general law of the animal economy, leads to hypertrophy. It will thus be seen that enlarged heart may have its origin from causes affecting both its outer tunic and its internal lining membrane. In what proportion of cases the disease arises from the one or the other of these sources, pathologists have not yet determined with accuracy. The notion of an enlargement of the heart from impediments operating mechanically, though true in a certain degree, has by some pathologists been pushed to an unreasonable extent.

5. Enlargements of the heart are believed also to have their origin in causes exterior to the heart. Dr. Latham has shown* that an unnatural narrowness of the aorta may operate as the

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* London Medical Gazette, vol. iii. p. 467.

direct exciting cause of enlargement of the heart. Such enlargement, he adds, may perhaps even be an indispensable condition for the continuance of life. Obstructions of the lungs have a tendency to produce accumulation in, and consequently *dilatation of, the right* cavities of the heart. Asthmatics furnish the most frequent instances of this. It is seldom that tubercular consumption is accompanied with enlargement of the heart. This, however, may be owing to the rapid waste of the blood which is then going on.

Treatment of enlarged heart.—Considerable attention is required in the management of the several varieties of enlarged heart, occurring as they do under very different, nay, even opposite circumstances, of the general system. Dilatation of the heart is frequently found, after death, to be associated with preternatural softness of its texture. This variety of enlargement depends mainly upon constitutional debility. Active measures of depletion, therefore, are here not only uncalled for, but they would seriously aggravate the disease. Tonics, and especially preparations of iron, are indicated, and frequently afford very marked relief to the symptoms. Dr. Elliotson recommends* the tartrate of iron, on account of its tendency to increase the flow of urine. In all states of enlarged heart it is necessary to pay attention to the state of the bowels and kidneys, and more especially to encourage the secretions of the kidneys by appropriate diuretics.

When enlargement of the heart is attended with great increase of its muscular parietes,—when the habit of body is plethoric, and strong disposition exists to local congestions, a different plan must be pursued. The diet should be carefully restricted. All violent exercises are to be strictly prohibited. Occasional purgatives of an active kind are to be given, and free diuresis kept up by the acetate of potash, in combination with small doses of tincture of digitalis, or colchicum, with the spt. ætheris nitrosi. Sometimes this effect is sufficiently produced by the daily use of broom tea. Care must be taken not to push digitalis so far as to lessen materially the number of pulsations; for in the dilated state of the heart, this has sometimes occasioned death.

Some physicians have advised, in addition to these measures, the general and local abstraction of blood. The application of leeches to the chest is sometimes advantageous, but great caution is required in the use of the lancet. When the cavities of the heart are much dilated, a large supply of blood is requisite to give to its fibres that *stimulus of distension* without which they will not contract. The irregular contractions of the heart, from deficient supply of blood to any one of its cavities, may be followed, not merely by syncope, but by rupture of blood-vessel in some distant part. Even in a paroxysm of urgent dyspnœa, when the gorged state of the heart or lungs seems to indicate the necessity of relief by bleeding, I have often witnessed the good effect of a glass of brandy. It probably acts by giving that degree of tone to the fibres of the heart which enables them to contract with firmness, and to expel the load of blood which oppresses them.

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* London Medical Gazette, vol. xii. p. 405.

In the enlarged heart much benefit is occasionally derived from the employment of anodynes. The nervous system is irritable, and under their use the heart's action becomes much tranquillised. The extract of hyoscyamus or conium may be given for this purpose, in the dose of six or eight grains at bed-time. Laudanum or the acetate of morphine are required in severer cases.

DISEASES OF THE INTERIOR OF THE HEART.

We now proceed to investigate the chronic affections of the interior of the heart, of which morbid anatomy displays many varieties. Those which are of most importance in practice, and to which my attention here will be exclusively directed, are, 1. Polypi of the heart. 2. Valvular disease of the heart. 3. Malformations of the heart.

Polypi of the heart.—Depositions of coagulable lymph in the several cavities of the heart, more particularly in the right auricle and ventricle, are frequently met with in the examination of dead bodies. In many cases these are formed after death. In others they probably take place during the hours which immediately precede the fatal event. There is some reason to believe that in a third set of cases such depositions from the blood take place during life, especially in the right auricle, and by impeding the flow of the blood through the heart, occasion dropsical accumulation. In languid habits, attended with an extremely slow circulation, I have reason to believe that this sometimes takes place. At any rate I have seen dropsy in such habits where firm polypous depositions in the right cavities of the heart were the only appearances found on dissection.

VALVULAR DISEASE OF THE HEART.

Disease of the internal lining membrane of the heart, ending in valvular disorganizations, begins in almost all cases (perhaps exclusively) in the left side of the heart. It frequently proves fatal without communicating with the right side at all. In cases where the right side participates, disease there is very seldom found in advance of that in the left.[*] The principal disorganizations, therefore, are of the mitral valve, and of the valves of the aorta. Next in point of frequency is disease of the tricuspid valve; and the rarest is disease of the valves of the pulmonary artery. The principal forms of valvular degeneration are—1. Cartilaginous thickening. 2. Vegetations, or fungous excrescences. 3. Ossification. The two former contract the opening; the latter, by impairing the flexibility of the valve, renders it comparatively useless. The effects of valvular disease of the heart are divisible into two classes: 1. Those that flow from impediment to the exit of the blood. 2. Those that arise from regurgitation of the blood into the auricle or ventricle which, in the course of circulation, is *behind* the obstructing cause. The first are cognizable, to a certain degree, by general and constitutional symptoms. The latter are known only by auscultation.

Symptoms of valvular disease of the left side.—When the circulation is obstructed by disease, either of the mitral or coronary valves of the aorta, the most remarkable and characteristic symptom is a bellows sound of the heart (*bruit de soufflet*), or a sound resembling the action of a saw or file (*bruit de râpe*). These sounds are diagnostic of obstruction to the passage of blood. The general symptoms which result from such a state of the heart are of various kinds, and certainly have not hitherto been detailed with all the fulness or accuracy of which the subject is probably susceptible. This depends chiefly on the rarity of simple valvular disease of the heart. In a large proportion of cases, such disease is coupled with hypertrophy of the heart, with dilatation of one or more of its cavities, or with inflammatory deposit on the pericardium. What portion of the general evils depends on the valvular, and what upon the concomitant disease, are questions difficult to decide. Besides which, it must be remembered that dilatation of the cavities of the heart can hardly take place without occasioning *imperfection* of the mitral or tricuspid valves, independent of organic disease in them.

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[*] Dr. Latham in Lond. Med. Gazette, vol. iii. page 114.

Considering the importance of the valves in the economy of the circulation, it is wonderful how little inconvenience is sometimes occasioned by very extensive valvular disease. In many cases such appearances have been found after death when least expected, and frequently the character of the symptoms during life has borne no proportion to the extent of disorganization subsequently discovered. On one occasion I witnessed acute gangrene of the foot in a young woman. Dissection exhibited large vegetations of the mitral valve. Whether the gangrene arose from the state of the mitral valve, or whether both were dependent on some general condition of the vascular system, are very difficult questions in pathology.

The chief symptom usually attributed to valvular disease is irregularity in the action of the heart. The pulse is small, weak, but above all intermittent. Intermission of the pulse is very far from indicating with any precision valvular disease; but when constantly present, *without* accompanying dyspepsia, hysteria, or hypochondriasis, and *with* other evidences of obstructed circulation, it may be admitted as a symptom of diseased valves. These other evidences are, frightful dreams and starting from sleep, turgescence of the jugular veins, dyspnœa, headache, swelled legs, and those marks of venous congestion about the head, lungs, or liver, which have been already adverted to.

Diagnosis of valvular disease.—To distinguish in which particular valve disease exists requires considerable tact. The general symptoms will sometimes prove an adequate guide to the experienced practitioner, of which a case recorded by Mr. Abernethy* offers a striking illustration. But external signs are also available. Dr. Elliotson states† that when the bellows sound is heard at the *moment* of the stroke of the heart, the obstruction is at the mouth of the aorta. When it takes place *after* the first stroke of the heart, the obstruction is in the mitral valve. Probably this rule admits of certain modifications; but to point these out would be inconsistent with the brevity at which I aim.

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* Medico-Chirurgical Transactions, vol. i. page 28.

† London Medical Gazette, vol. xii. page 344.

Prognosis.—The course and termination of valvular disease of the heart is liable to great variation, depending, however, more upon the constitution of the individual than upon the influence of remedial agents. Sometimes the patient expires suddenly. The heart itself may give way, or coma may supervene. In some instances death takes place gradually, being preceded by dropsy, or by emaciation and increasing debility.

Causes of valvular disease of the heart.—The origin of valvular disease, especially of that which occurs in the middle periods of life, and leads to warty vegetations, is involved in great obscurity. It sometimes appears to originate in idiopathic inflammation of the internal lining membrane of the heart. The symptoms of such a disease, however, are little known. Pain in the region of the heart is generally present, but unaccompanied with evidence of pericardial disease. Rheumatic inflammation of the heart has been known, in some cases, to extend to the interior, and to occasion a deposit of lymph under the mitral or tricuspid valve, impeding its motion and destroying its office. There is probably much for future pathologists to establish in this obscure division of our subject. When valvular disease, assuming the form of ossification, occurs in elderly persons, it is doubtless dependent entirely upon *age*.

Treatment of valvular disease.—The inquiries into which we have been led regarding the nature and varieties of valvular disease of the heart, have little or no bearing upon practice. To ascertain the exact condition of the patient is, however, always of use, and though it suggests no positive remedy, may prevent the adoption of useless or of injurious measures. We have no control over the progress of valvular disease, further than may result from the adoption of antiphlogistic measures (especially local bleeding, purgatives, diuretics. and mercury), when pain in the region of the heart, a loaded tongue, and active pulse, give evidence of inflammatory action. An anodyne at night will contribute largely to the patient's comfort.

MALFORMATIONS OF THE HEART.

Congenital malformations of the heart and large blood-vessels are of various kinds, and they have been ably described by Dr. Farre,* to whose work I beg to refer for the anatomical peculiarities of the several cases. They all agree in one result,—the intermixture of venous with arterial blood throughout the body. It is certainly a curious fact, that life should be compatible with such a state of the circulating system; yet it is so, and persons have been known to live for many years with it, and even ultimately to die of a disease unconnected with such deviation from ordinary structure. In 1817, I saw a youth, eighteen years of age, who died of consumption, with congenital disease of the interior of the heart of the following kind. The aorta and the pulmonary artery arose from the right ventricle, the right ventricle communicating with the left by a large and free opening.† The great source of mischief and danger, as Dr. Farre has pointed out, is not the mere mingling of black and red blood, but the *difficulty* with which the circulation is generally carried on by a malformed heart. This is connected, in many cases, with the comparatively small size of the pulmonary artery; the consequence of which is, that the *full* proportion of blood is not circulated though the lungs.

The principal symptom of malformed heart is a permanent blue colour of the skin; from which circumstance the term *blue disease*, or *cyanosis*, has commonly been applied to these cases. The other symptoms to which it gives rise are general weakness of the whole frame, permanent or spasmodic dyspnœa, palpitation, an irregular, weak, or intermittent pulse, and in some cases coldness of the skin, and emaciation. Persons who have malformed hearts are liable to hæmorrhages, dropsical effusions, attacks of syncope or of epilepsy, and occasionally to the unequivocal symptoms of oppressed brain.

ANEURISM OF THE AORTA.

This is a frequent and most distressing state of disease. In its early stages it may sometimes be detected by stethoscopic examination; but there are various sources of fallacy here, which, without great experience, may mislead rather than direct the judgment of the practitioner. A loud sound heard in the region of the sternum, or sometimes a bellows sound, indicates incipient aneurism. Dr. Baillie cautions us against supposing that strong pulsation in the chest indicates necessarily disorganization, either of the heart, or of the great vessels in its neighbourhood. Further, the frequent concurrence of aneurism of the aorta with disease of the heart itself, obscures the diagnosis. In fact, notwithstanding the aid of auscultation, aneurism of the thoracic aorta can never be distinguished with any certainty until it has attained to such a size that a *tumour* begins to be formed externally, accompanied with a strong pulsation. There is generally more or less pain in the tumour, shooting to the arm of the same side; and in proportion to the advances of the disease, the breathing becomes disturbed. It sometimes proves fatal *suddenly* by the bursting of the sac, but in many cases the patient is destroyed more gradually by interruption to the respiration.

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* Pathological Researches by J. R. Farre, M.D. Essay I. on Malformations of the Human Heart. London, 1814.

† See Medico-Chirurgical Transactions, vol. xi. page 296.

Of its causes, little is known with certainty. It occurs only in the middle and more advanced periods of life. It is most frequent among the labouring classes of society, in whom it frequently owes its origin to violent muscular efforts.

The unpleasant symptoms occasioned by aneurism of the aorta admit of very essential relief, and perhaps even the growth of the tumour is sometimes checked, by medicine. Repeated leeches to the chest have proved serviceable in many cases, and the application of cold to the tumour has been occasionally productive of advantage. Digitalis unquestionably possesses a very considerable power in moderating the urgent symptoms; and if to the occasional employment of this drug be added a strict attention to diet and regimen, the patient may often pass the remainder of his days with tolerable ease.

CHAP. VI.

ASPHYXIA.

Extent and Obscurity of the Doctrines connected with Asphyxia. Their Application to the Phenomena of Disease. Animal and Organic Life. Of the several Modes of Death. Sudden Death, beginning at the Lungs—at the Brain—at the Heart. Exemplified in the Cases of Drowning, Hanging, the Narcotic Poisons, Irrespirable Gases, Cold. Death by a more general Effect upon the System, instanced in the Case of Arsenic, Lightning, and Hæmorrhage. Of the immediate Causes of Death in Acute and Chronic Diseases. —Treatment of Cases of Suspended Animation. Effects and Application of Artificial Respiration.

The term asphyxia (literally signifying want of pulse) has commonly been appropriated to those cases in which animation is for a time suspended, from some violent cause impeding respiration, such as strangulation, drowning, or exposure to mephitic gases; but in the present instance I propose to employ it in a much more extended sense. My intention is to include under this head all those investigations which are connected with sudden death, from whatever cause arising, and without reference to the possibility of subsequent reanimation. Asphyxia, in this acceptation, opens a most extensive field of curious investigation, which on many accounts deserves the attention of the physician. Setting aside the importance of the *pathological* doctrines which it directly embraces, or to which it more distantly refers, it is interesting as being one of the most frequent subjects on which judicial examinations of medical men are required. It is no less important as connecting itself very intimately with the more familiar objects of medical inquiry. Asphyxia cannot be considered as a disease, but it is a state nearly allied to it, in which the sources of life and health are suddenly and violently invaded; the different kinds of sudden death being merely the simplest cases and the best illustrations of those terminations of disease, which it is the object of the art of medicine to avert.

It is hardly necessary to enumerate the many difficulties with which the subject of asphyxia is surrounded. From the remarks already offered, it must be seen to involve a number of the most abstruse questions both in physiology and pathology. To such inherent difficulties is doubtless attributable the neglect which asphyxia has experienced from the systematic writers of former times. Bichat, in his Essay on Life and Death, first placed the inquiry upon a scientific basis; but much still remains to be done with regard to it, without overstepping those boundaries which physical science ought always to prescribe to itself, in investigating the phenomena of life. Conscious of the difficulties, but aware of the importance of the subject, my endeavour will be to lay before the student such an *elementary* view of the leading principles which it embraces, as may enable him to appreciate more fully its bearings, and to prosecute the inquiry hereafter with a more definite understanding of its objects. The principal points to which my attention will be directed, are the causes of death from hanging, drowning, mephitic gases, lightning, and poisons; the causes of sudden death which are independent of external agency; the causes of death in acute and chronic diseases generally; and the means of restoring suspended animation.

The foundation of almost all reasonings concerning asphyxia is laid in the mutual relations and connections of the three great organs of the body, the heart, the lungs, and the brain; and the consequent division of the phenomena of the living system, into those of *organic* and *animal* life. This great principle in physiology was partially known to some of the older authors, but was first fully developed by Bichat. It will be sufficient for me here to remind the student, that the heart and arteries are the bases of all the operations of vitality, and the grand source therefore of *organic* life. Fœtuses have been born without a brain, but never without an arterial system. Next to circulation, the most important function in the body is respiration, because by it the *arterialization* of the blood is effected. The third in the series is the brain and nervous system, the origin of *animal* life, and necessary to respiration, inasmuch as that function is carried on by means of *sensations*, which in all cases depend upon a peculiar condition of the brain and nerves. Respiration, therefore, is the link uniting the phenomena of organic and animal life.

All sudden deaths are of one or other of the following kinds: 1. Death beginning at the lungs; 2. Death beginning at the brain; 3. Death beginning at the heart; 4. The simultaneous destruction of animal and organic life. The two first may be considered as modifications of each other; and as they are the most usual modes by which death is effected, whether suddenly, or in the progress of disease, they well merit a priority of discussion.

1. *Death by suffocation.*—An accurate observation of nature will show, that in many kinds of death (well exemplified in that by suffocation) two distinct stages are perceptible. In the first, sensations, thought, and voluntary motions are destroyed. In the second, circulation and the organic functions cease. In common language, the term *life* is annexed to the presence of mental phenomena, and death to their absence. In a strictly physical sense, however, the body is said to be alive, so long as actions are going on in it, differing from any which chemical and mechanical principles can explain. In considering therefore the order in which the functions cease, we do not stop when we come to the cessation of all indications of mind, but we pursue the changes as long as any movements take place in the body inexplicable by such laws. In other words, the body is not pathologically considered as *dead*, until *organic* as well as *animal* life has ceased.

Many theories have been proposed to explain the mode by which *suffocation* proves fatal, and some of them obtained credit from their apparent simplicity. We are indebted to Bichat, however, for proving that the changes in *pure asphyxia* are more complicated than had generally been supposed. He distinctly ascertained that the heart continues to act *after* respiration has ceased; that the left ventricle propels venous blood to all parts of the body; that when a very few waves of unarterialized blood have circulated through the brain, insensibility takes place, and animal life ceases; and, lastly, that the penetration of venous blood gradually destroys the action of the heart itself, and of every other contractile part through which it circulates. Death by pure asphyxia, therefore, is attributable to venous blood acting as a poison, first, upon the nervous, and secondly, upon the muscular textures of the body. Here animal life (with which suffering is connected) ceases before organic life, and doubtless this is a benevolent provision of nature.

That this is a correct description of the order in which the functions cease in asphyxia, will be rendered apparent by the following considerations. In animals which have been made the subject of experiment, the heart has been seen contracting after the diaphragm has ceased to move. Dark-coloured blood is found in the left side of the heart and in the great arteries. The large veins on the *right* side of the heart are always the most full of blood. The skin and different other organs assume speedily a livid colour.

The principle in pathology now adverted to admits of a further illustration from what happens in a few cases of drowning, and more frequently after exposure to carbonic acid gas. The action of the heart is renewed, but insensibility continues, and the patient, after remaining in a perfectly apoplectic state for a few hours, dies. In some instances these comatose symptoms have subsided, and life has been preserved. It is fairly presumable, that in cases of this kind the quantity of venous blood which had circulated through the brain had been sufficient to injure seriously, though not totally to destroy, the functions of the brain.

The sort of death that I have now described as beginning at the lungs, takes place not only in hanging and drowning, but by cutting the spinal cord in the upper part of the neck, whereby the muscles of respiration are paralysed, and by confining an animal in vacuo, or in a simple irrespirable gas, such as nitrogen.

2. *Death by Coma.*—In this instance the functions of the brain, sensibility, thought, and voluntary motion, cease first. Respiration, which is an action dependent upon sensibility, fails next. The blood not being arterialized, the functions of the heart then cease as in the former case. The great difference between death beginning at the brain, and that by suffocation is, that the circulation of black blood through the arteries is in the present instance the *effect*, and in the other the *cause* of the cessation of animal life. This at least is one mode by which death takes place from causes operating immediately on the brain. I shall hereafter have occasion to point out that it is not, as Bichat imagined, the only one. It remains to state, that the first link in the chain of phenomena, the cessation of animal life, is not always *instant* and *complete*. Respiration (performed, it is true, slowly and with difficulty) sometimes continues after voluntary motion, and all other marks of sensibility, have ceased. This constitutes, as the student will at once anticipate, the state of coma or apoplexy.

Instances of *sudden* death, beginning at the brain, occur in the case of severe injuries to the head, epileptic fits ushering in the attack of small-pox, poisoning by opium, woorara, and the greater number of the narcotic poisons.

3. *Death by syncope.*—Sudden death beginning at the heart opens a wide field of inquiry not less interesting than that which has already engaged our attention. Here the order in which the functions terminate is reversed. The pulsations of the heart are first stopped; and as the brain ceases to be excited by the stimulus of blood, sensation, voluntary motion, and the mental phenomena gradually fail, and with them respiration and the contractile power of moving parts. In this case breathing is the latest act of life, and therefore here only can an animal, in strict pathological language, be said to *expire.*

There is an important principle in pathology involved in this consideration; *viz.*, that the mere cutting off the supply of arterial blood is not so detrimental to the brain, nor so speedily and certainly fatal, as the penetration of its substance by venous blood. This is the reason why persons recover so easily from fainting, even though sensation and thought be there as completely at a stand as in the case of a drowned man. So rare is death beginning at the heart, in comparison with the other modes already noticed, that physiologists have characterized this organ as the *ultimum moriens.*

On opening the bodies of animals who are killed by some poison acting directly on the heart, *scarlet* blood is found in the left side of that organ, and the heart and large arteries appear turgid. The skin does not become livid as in death by suffocation. Very often, indeed, no perceptible change in the body takes place for many days. In most of these cases the blood is found *uncoagulated,* a phenomenon not yet satisfactorily explained.

Sudden death beginning at the heart occurs from the action of certain *poisons,* as the upas antiar, and tobacco; in particular diseases affecting the heart, as angina pectoris; apparently in some cases from a *paralytic* state of the heart, and lastly, from extreme cold. It is well known, that animals exposed to a certain degree of cold, perish. There is some doubt, however, as to the precise mode by which it destroys life. Some imagine that it operates by *coma;* and others, that it enfeebles, and ultimately checks altogether, the contractile power of the heart.

In either case it merits great attention from the practitioner, being frequently associated as the cause of death with simple suffocation.

4. *Simultaneous cessation of animal and organic life.*—It is not to be supposed that all cases of sudden death can be classed under one or other of the heads to which I have now adverted. Such a contracted view of the subject of asphyxia might tend rather to embarrass than to assist the inquiries of the student. He must be aware, that there are, fourthly, cases of sudden death in which all the powers of vitality are at once destroyed, or at least in which the functions of animal and organic life are so equally impaired, that it is impossible to ascertain the order of their cessation. Such cases are far from being rare. The most familiar instance which can be given is that of poisoning by *arsenic*, taken in large quantities. The same principle is exemplified where death takes place from lightning, and exposure to the vapours of sulphur; and lastly, it is occasionally instanced in certain violent impressions made on the brain and spinal marrow, where death, both of the heart and brain, ensues instantaneously, without the intervention of the respiration. It might be imagined, that excessive hæmorrhage proves fatal by its suddenly checking the heart's action. But it has been shown that the heart continues to contract after all supply of blood to it is cut off, and hæmorrhage therefore is the cause of death by a more general effect upon the *whole* system.

Modes of death in disease.—Such are the modes by which the different kinds of sudden death are brought about; and the deviations from these, in the case of death from acute and chronic diseases, are not so great as might at first be imagined. If attention be paid to the series of symptoms, that mark the close of life, different sets of phenomena will present themselves. In one instance *dyspnœa* will be first observed, followed by delirium and coma. As this becomes gradually more and more intense, respiration proportionably labours, and at length stops altogether; the extremities grow cold, and the heart ceases to beat. This is plainly death beginning at the lungs. It takes place in almost all diseases affecting the lungs primarily, most obviously in acute pneumonia, vomica, and hydrothorax, and in many of those which affect the lungs secondarily, such as fever, small-pox, and measles.

In another instance *coma* occurs first, in which case the pulse often continues firm and unaltered in its character, and the extremities warm, up to the period when respiration ceases, and when, in the common acceptation of the term, life is at a close. This mode of death (by coma) is witnessed in common cases of apoplexy, in hydrocephalus, phrenitis, and fevers complicated with local determination to the head.

The attentive observer will lastly have occasion to notice many cases where the first symptoms of approaching death are *feebleness of the pulse*, and *cold extremities*, respiration being still free, and the functions of the brain unimpaired. In such cases, it is not uncommon to find the mind perfectly clear, even up to the last breath which the patient draws. Here, in the language of the common people, the patient is said *to die very hard*. It is unnecessary to say, that this is death beginning at the heart, in which no admixture of unarterialised blood overpowers the operations of the nervous system. Such a mode of death is often observed in acute pericarditis; in persons labouring under peritonæal inflammation affecting a *large surface* of the membrane; in the case of extensive and violent injuries inflicted upon any part of the body; in severe burns, in ileus, in organic affections of the stomach and other viscera; and I believe also in tetanus and hydrophobia. We are indebted to Mr. Chevalier,* for pointing out to us another occasion in which this mode of death takes place. It is where a woman dies soon after child-birth, especially of twins, without any great degree of hæmorrhage. Here the heart and whole system languish under the efforts of parturition. The blood is detained in the capillaries, and the heart ceases to contract from *exhaustion*.

The only case of disease which occurs to me as illustrating the contemporaneous destruction of the brain and heart is that of gangrene, which, like lightning, or arsenic, appears to overpower equally every part of the animal economy.

Treatment of suspended animation.—The last topic to which I proposed to advert was the treatment of genuine asphyxia. Animation is here considered to be only *suspended*, and from very early times a notion has prevailed that in such cases the powers of medicine might be signally displayed in the resuscitation of life. It must be obvious, however, to the student, that much caution is here required. While the doctrines connected with asphyxia are involved in such obscurity, it is impossible to suppose that our practice can, or ought to be, regulated by the conjectures of persons, who, whatever be their claims to humanity, have none to physiological knowledge. In cases of such imminent danger as those of asphyxia, a measure not founded upon a thorough acquaintance with the subject may very probably add materially to the danger of the patient, check those ill-understood efforts of nature, from which alone real benefit could have been derived, and thus tend only to *extinguish* the glimmering flame of life. When we find blood-letting, cold affusion, the warm bath, tobacco glysters, galvanism, and artificial respiration, recommended without discrimination in the treatment of asphyxia, it is obvious that no just understanding can exist of the nature of those changes which are taking place in the body, nor of the operation of each remedy. In the few remarks which I have now to offer on the management of persons in the state of asphyxia, I shall be careful not to exceed those limits which the present state of physiological science prescribes.

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* Medico-Chirurgical Transactions, vol. i. page 157.

The first question that naturally occurs is, for how long a time may breathing be impeded, and the body remain susceptible of reanimation? Instances are recorded of the recovery of persons after being half an hour under water; but in a scientific investigation no credit can be given to such statements. It is confidently said, that even the most experienced divers of Ceylon cannot remain under water an entire minute. Dr. Davy informs me, that he has not been able to recover dogs that have been under water *two* minutes, even by means of artificial respiration and galvanism employed immediately. It is therefore a reasonable supposition, that if respiration has ceased during three, or at furthest four minutes, life is irrecoverably lost. It is probable that something depends on the *temperature* of the water. An animal immersed in a freezing mixture, but with the respiratory organs free, speedily dies. This suggests the important practical inference, that during the state of asphyxia, the body is to be kept in a warm atmosphere: and here we may observe how closely the dictates of science correspond with those of common humanity.

The application of artificial respiration in cases of pure asphyxia, holds out, in every point of view, a reasonable prospect of success; and that it has been effectual in restoring suspended animation, numerous observations concur to assure us. Bichat maintained, but apparently on theoretical grounds only, that this operation can never restore circulation that has once ceased; in other words, that it is effectual only in those instances where the heart still pulsates, though carrying on a circulation of venous blood. According to the statement of persons worthy of credit, however, the action of this organ has been renewed by artificial respiration, after all marks of it had *wholly* ceased; and here it is probable that the left side of the heart, which could no longer be excited to contraction by venous blood, was stimulated by blood which had been rendered arterial. Sir Benjamin Brodie has shown, that this process will support circulation for many hours in small animals, even after the complete destruction of animal life by cutting off the head. We should thus be encouraged to persevere in its employment so long as any marks of pulsation in the heart remain, under the hope that the brain may gradually be restored from that state of *oppression* into which it was thrown by the influx of venous blood. Artificial respiration, therefore, appears well adapted to those cases of apoplexy succeeding asphyxia, to which I formerly referred.

Reasoning from these principles, Sir Benjamin Brodie has conjectured, that artificial respiration might be successfully applied in the case of animation suspended by opium, woorara, and such other narcotic poisons as operate first upon the brain, and through it upon the respiration. Some experiments recorded in the Philosophical Transactions for 1812, give countenance to this expectation. The same measure had previously been practised, and with success, by Mr. T. Whateley, in the case of a man who had swallowed half an ounce of solid opium.*

From the preceding remarks, it will be obvious that artificial respiration is wholly inapplicable to those numerous instances of sudden death which *begin at the heart*. Scarlet blood is here already present in its left cavities, and means of relief for such cases, if any exist, must be sought for elsewhere.

In like manner, it would be easy to show how great is the danger which attends an indiscriminate employment of tobacco glysters and cold affusion. These have a direct power in checking the heart's action, and must, in a great majority of cases of asphyxia, be positively injurious. Galvanism holds out a better prospect of advantage; but the experiments hitherto made with the view of determining the kind and degree of influence which it possesses, are not sufficiently accurate to induce me to hazard any decided opinion of its value.

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* See Medical Observations and Inquiries, vol. vi. page 331.

The opening of a vein has been frequently resorted to, both in the asphyxia of drowned persons, and in that which arises from the inhalation of carbonic acid gas. In the former case, if a flow of blood can be obtained, the operation may possibly be useful, by relieving the oppressed state of the heart and great vessels. In the latter case, great caution is required, as we may gather from the experience of Dr. Babington, recorded in the Medico-Chirurgical Transactions.* The remarks of this author on the state of asphyxia, and the remedies proposed for its relief, are well deserving of attention.

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* Vol. i. p. 83, "Case of Exposure to the Vapour of burning Charcoal," 1806.

CLASS VII.

CHRONIC DISEASES OF THE CHYLOPOIETIC VISCERA.

CHAP. I.

DYSPEPSIA.

Frequency of dyspeptic Complaints. Symptoms of Dyspepsia. Physiological considerations connected with Digestion. Proximate cause of Indigestion. Varieties of Dyspepsia. Gastrodynia and Cardialgia. Pyrosis. Flatulentia. Anorexia. Dyspepsia, primary and secondary. Exciting Causes of primary Dyspepsia. Sympathies of the Stomach. Varieties of secondary Dyspepsia. Prognosis. Principles of Treatment. Diet, Regimen, and Medicine. Organic Diseases of the Stomach.

INDIGESTION is certainly the most frequent of all diseases. It is met with in every country, in every class of society, in every season of the year. Devoid of the danger which attends other diseases, it is nevertheless equally distressing to the patient, poisoning all the sources of his enjoyment, and leading, in many instances, to the miseries of confirmed hypochondriasis. Long as it has been made the subject of inquiry by medical authors, it remains involved in much obscurity. The pathology of the disease is little understood; the method of its treatment is still imperfectly known; and the most remarkable diversities of opinion are entertained regarding the extent to which it influences the production of other disorders. On these various accounts, indigestion may justly lay claim to a full and accurate investigation.

By dyspepsia, in its most precise sense, physicians understand that state of the stomach, in which its functions are disturbed, without the presence of any other disease. In practice, however, it will be found impossible to restrict the meaning of the term within such narrow limits. The stomach being one of the great centres of the system, its functions are more or less disturbed in every disorder to which the human body is subject; and thus to confine the acceptation of dyspepsia, would be to presuppose our knowledge of the diagnostic features of many very obscure forms of disease. It will be sufficient, therefore, to limit the term dyspepsia to those cases in which the functions of the stomach are impaired, without the presence of well-marked general fever, of local inflammation in the organ itself, or of any very obvious *cognizable* disease in a distant part. So far from indulging a too strict adherence to nosological accuracy, it will be advisable to acknowledge a distinction between *primary* and *secondary* dyspepsia. In the latter case the dyspeptic symptoms, though in reality secondary, yet often occupy the first place in the mind of the patient, those of the distant organ being either very obscure, or but little troublesome, or manifesting themselves only in the *progress* of the disorder.

Symptoms.—The symptoms of dyspepsia are extremely diversified. They may be divided into such as are referrible to the stomach itself, or to its sympathies with other parts of the body, especially the colon, kidneys, heart and lungs, brain, and nervous system. Among the first may be enumerated, nausea, pain in the epigastrium or hypochondria, heart-burn, a sense of fulness, distention, or weight in the stomach, a feeling as if a ball were lodged in the œsophagus, acid or fœtid eructations, vomiting, especially of a clear liquor, sometimes of an acid quality and often in vast quantity, a sensation of *sinking* or fluttering at the pit of the stomach, and lastly loss of appetite. To the second head of dyspeptic symptoms may be referred, among many others, costiveness, or an irregular state of the bowels, with a morbid appearance of the evacuations; pain of the back and turbid urine; a disagreeable taste in the mouth, especially on first waking; a feeling of stinging, or heat as of cayenne pepper, in the mouth; toothache; palpitation, pulsation in the epigastrium, irregularity of the pulse; a short dry cough, and occasional difficulty of breathing; giddiness and headache, sometimes referred to the fore, but more commonly to the back part of the head; languor, lassitude, and great depression of spirits, with fear of death, or of impending evil—in one word, hypochondriasis. These last evidences of affection of the nervous system indicate a very aggravated state of the disease, and the probability of a protracted recovery.

The tongue is generally referred to as affording evidence of the state of the stomach; but it will often be found that the tongue is perfectly clean when the stomach is most incontestibly disordered. It would seem, indeed, as if the morbid appearances of the tongue (its fur, dryness, præternatural redness and smoothness, and its chapped aspect) are referrible to the state of the constitution rather than to any particular derangement in the stomach. When, however, we observe the tongue *furred and moist* (its true character in common dyspepsia), that is to say, when the secretions of the mouth are depraved, we may reasonably presume that there exists a similarly disordered state of the secretions of the stomach.

In adults, dyspepsia occasionally produces a state of ephemeral feverishness. In infants this is very commonly observed, and it often increases to a state of high and formidable excitement. Very anomalous pains too sometimes arise from simple dyspepsia; such as pain in the heel, calves of the legs, or wrists.

Process of healthy digestion.—To form a just idea of the connection of these various symptoms with a disordered state of the functions of the stomach,—to illustrate the modes in which the several exciting causes of the disease, hereafter to be mentioned, operate,—still more with the view of explaining how dyspepsia becomes so frequently a concomitant or cause of local disease in a distant part, we must advert to a few facts connected with the physiology of the stomach.

There appear to be three great steps in the process of digestion: 1. The first of these is an intimate mixture of the food with certain *fluids* of the body, particularly the saliva, and secretions of the stomach. It is probable that these have a higher office than merely lubricating the coats of the first passages, and moistening the morsel of food; but physiologists are not agreed as to their exact operation. The notion of a *chemical* solution of the food in the gastric juice is still entertained by some; but it is at variance with the results of chemical analysis. It is not unreasonable to believe, that the animal fluids act to a certain degree as *ferments*, approximating the food taken in to their own nature, by means peculiar to the operations of life, but analogous, as we may presume, to some acknowledged chemical phenomena.

2. The second important part of the function of digestion is the detention of the food for a certain length of time in the cavity of the stomach, in which stage of the process the food is brought by degrees into contact with its coats, and exposed to the influence of its *nerves*. Here that peculiar vital action is exerted upon the food which renders digestion so totally different from a chemical operation, and which actually suspends ordinary chemical agency. In this stage of digestion too it appears that the food is reduced to its proper consistence as to *fluidity*, the absorbents of the stomach rapidly removing any superabundant fluid, and thirst being excited when the gastric secretions are insufficient for the due moistening of the mass.

3. The third step in the progress of digestion is the propulsion of the chyme into the duodenum, where it becomes mixed with the bile and pancreatic juice. The length of time during which the aliment remains in the stomach has never been very accurately determined. It probably varies in different individuals, according to the *energy* of the stomach, and in the same individual at different times, according to the nature of the food, and its greater or less facility of digestion. From three to four hours is perhaps the average. At the end of this period, the pyloric orifice, which had previously been closed, gradually dilates, so as to allow the mass of food to pass into the duodenum, the stomach remaining perfectly empty until the next meal. In the duodenum the chyme, mixing with the bile and pancreatic juice, certainly remains a considerable time, and changes in it there take place which are necessary to the full completion of digestion. The important influence of this organ has procured for it the appropriate name of *ventriculus succenturiatus*. From the duodenum the food passes into the loose portions of the small intestines, and thence into the colon. In a state of perfect health, the whole process of digestion is completed, and the excrementitious part of the food is ready for expulsion, in twenty-four hours from the time of meal.

Proximate cause of indigestion.—From this brief statement of the steps in the progress of digestion, we shall be prepared to give an explanation of the several modes in which dyspepsia may be brought about.

1. Dyspepsia may arise from a morbid condition of the nerves of the stomach. This is the *proximate cause* of the complaint in the majority of cases. It is often associated with general

torpor, and deficient nervous energy through the system generally. In consequence of such defective supply of nervous power, the food is detained too long in the stomach, undergoing there no other changes than those to which it would have been subjected out of the body, viz. fermentation, and putrefaction. But besides this, the glands subservient to digestion do not, under defective supply of nervous influence, contribute their due share of assimilating fluids. The saliva may be deficient. The gastric juice may be either deficient in quantity, or vitiated in quality. It may be too thin or too acid. It may be so tenacious as to adhere firmly to the coats of the stomach. It may be acrid, and superabundant in quantity, as well as of bad quality.

2. Dyspepsia may arise from a low or subacute inflammation of the mucous membrane of the stomach. The result of this will be, that the food is either vomited, or propelled into the duodenum before it has undergone its proper changes. Now the duodenum and intestinal canal are fitted to receive the food *after* it has undergone the first processes of digestion, but they are irritated by food which is unassimilated. Hence the diarrhœa that so often accompanies acute dyspepsia. The indigestion of drunkards depends upon low inflammation of the stomach. That which accompanies pregnancy has, in some cases, the like condition of the vessels for its proximate cause.

3. Dyspeptic symptoms may originate, independent of all disease in the stomach, from the functions of the duodenum being imperfectly performed. Morbid accumulation in the duodenum is justly reckoned the immediate cause of that pain high up in the back which sometimes accompanies, but is often observed independent of, the more common dyspeptic symptoms. Lastly, the bile may get into the stomach, and there interfere with the *first* steps in the digestive process.

Varieties of Dyspepsia.—All practitioners must acknowledge the necessity of distinctions among the numerous cases of dyspepsia ; but great difficulties have been experienced in establishing any which may have a practical application. Dr. Pemberton* attempted to found a division of dyspeptic cases upon the *pathological considerations* which I have just adverted to ; but though we may acknowledge, in theory, an independent affection of the *glands*, the *nerves*, and the *muscles* of the stomach, yet, in practice, it will be found impossible to trace their diagnostic symptoms, or to ground upon such views any important differences of treatment.

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* Practical Treatise on various Diseases of the Abdominal Viscera. 1814, p. 99.

The older nosologists almost uniformly agreed in looking upon *symptoms* as the best groundwork of distinction among dyspeptic cases, the most prominent being pain, vomiting, flatulence, and loss of appetite. These were elevated by Sauvages into the rank of distinct diseases, under the names of gastrodynia, pyrosis, flatulentia, and anorexia. Dr. Cullen united them under the generic term dyspepsia. Whether we view them, however, as symptoms or as diseases, they deserve some specific mention.

I. GASTRODYNIA AND CARDIALGIA.

These terms denote the several kinds of uneasiness which accompany gastric disease. Pain of the epigastrium, whether acute or dull, is called gastrodynia. The sensation of heat in the stomach is called cardialgia. In one case of dyspepsia I witnessed the very rare feeling of coldness at the stomach. The patient felt as if a lump of ice was thawing in the epigastrium. Pain at the stomach is sometimes aggravated on pressure. Occasionally it is permanent and acute, and when accompanied with hardness of the pulse, demands the loss of blood from the arm, or the free application of leeches to the pit of the stomach. I have seen it terminate by the rupture of a blood-vessel, and the consequent vomiting and purging of blood. The sensation of heat in the stomach is usually attributed to the presence of acidity. The relief afforded by magnesia, lime-water, and the carbonate of soda, gives countenance to such an opinion. Acute pain of the stomach sometimes arises very suddenly, and yields after a brief interval of intense suffering. This complaint, called spasm of the stomach, is of rare occurrence, but of formidable character. It generally arises from some error in diet, and is, for the most part, connected with that ill-defined state of constitution, called the *gouty diathesis*. The remedies on which we rely for its relief, in the first instance, are ether, laudanum, wine, brandy, and aromatics, taken internally; and fomentations or stimulating epithems to the epigastrium. Pain of the stomach is sometimes felt only after food has been taken. At other times the uneasiness of the stomach is *relieved* by taking food.

II. PYROSIS.—VOMITUS.

In some cases of indigestion, the stomach is very irritable. It rejects, by vomiting, both food and medicine. In many cases, however, the matters ejected are merely the thin watery secretions of the stomach itself, generally tasteless, but sometimes acid, so as to set the teeth on edge, sometimes acrid, and occasionally bilious. This symptom is called pyrosis, or the water-brash. The vomiting usually takes place early in the morning. In severe cases, it recurs two or three times a day. It is more frequent in women than men. It is often found in connection with general derangement of the nervous system, and occasionally with emaciation. In some instances it accompanies organic disease of the stomach, pancreas, or liver.* It is more frequent in advanced than in early life. Dr. Pemberton had great confidence in the efficacy of astringents and opiates (especially the pulvis kino compositus) in the relief of pyrosis,† but I have generally found that its treatment is in all respects the same as for the other varieties of indigestion. Abstinence from animal food is sometimes required. It can be traced in many cases to indulgence in spirituous liquors.

Dr. Pemberton was, I believe, the first to describe a disease of the stomach, characterized by *incessant vomiting,* unattended by pain, or any symptoms of diseased structure in the organ itself.‡ It has frequently *proved fatal,* and the cause of the disease has remained, in many instances, undiscovered after dissection. It is probably, in all cases, symptomatic of some obscure affection in a distant organ. In a case that fell under my own observation, it appeared to depend upon a morbid condition of the ovarium. In another, described in the Medical Communications,§ it was connected with a diseased state of the kidney. Dr. Baillie has described‖ a similar affection of the stomach, in which this organ throws up a fluid like cocoa, in large quantity, a quart perhaps at a time, and perhaps for many days together. This fluid is a diseased secretion from the inner coat of the stomach, and the complaint is sometimes (though not invariably) connected with a faulty state of the liver. In some instances it has proved fatal. According to Dr. Baillie's experience, it is but little influenced either by diet or medicine. The tincture of kino or catechu with laudanum afforded some relief, with the aid of an occasional mild aperient.

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* Dr. Seymour on Pyrosis in London Medical Gazette, vol. i. page 783.

† Treatise on the Diseases of the Abdominal Viscera, page 110.

‡ Diseases of the Abdominal Viscera, page 132.

§ Vol. i. page 127.

‖ Lectures and Observations on Medicine, London, 1825.—(Unpublished.) Page 192.

III. FLATULENTIA.

Flatulent distension of the stomach (called wind on the stomach) is the most frequent form which dyspepsia assumes. The appetite is perhaps but little impaired. Food is taken into the stomach, and there ferments. Flatulency frequently gives rise to very considerable pain, especially of the left side, fœtid eructations, and sometimes dyspnœa. It is relieved by stimulants and mild eccoprotic aperients (such as rhubarb) which assist the stomach in propelling its contents into the duodenum. It is the usual form in which dyspepsia shows itself in that class of society who are engaged in incessant mental exertion. Dyspepsia is especially the disease of lawyers, authors, and students. The want of due bodily exercise contributes in their case, probably even more than the labour of thought, to produce the disease.

IV. ANOREXIA.

Loss of appetite is by no means a constant symptom of indigestion, but it occurs in some cases, and always indicates severity of the disease. Occasionally it happens, that without any obvious cause, except perhaps mental anxiety, the stomach loses almost entirely and very rapidly, the power of digestion. The only complaint of the patient is want of appetite. He becomes pale and emaciated, and appears as if affected by some fatal visceral disease. Dr. Baillie informs us, that some of these cases have been completely restored to health by a course of the Bath waters, but in most instances the disease proceeds to a fatal termination, cough and delirium coming on as it advances. It is one of the most striking evidences of that general state of constitutional weakness which is known to the world under the name of the *decay of nature.*

Causes of Dyspepsia.—There are, undoubtedly, persons who possess, and perhaps even inherit, *constitutional weakness* of stomach; but such a predisposition to indigestion is, happily, not common, and being altogether beyond the reach of art, may, without impropriety, be discarded from our present consideration. It remains, then, only that the *exciting* causes of the primary form of dyspepsia be enumerated, and the following will, I believe, be found the most important:—Occasional overloading of the stomach;—Habitual overfeeding;—Habitual indulgence in spirituous liquors;—Want of air and exercise;—Excessive or long-continued evacuations;—Cold;—Anxiety of mind.

1. The first and most simple cause of dyspepsia is the occasional *overloading* of the stomach; or the taking in of some indigestible substance, which, even in small quantity, offends the nerves of the stomach, such as tainted meat; or, lastly, an accidental debauch of wine. This form of dyspepsia is commonly attended with a sense of oppression at the stomach, *nausea*, and that peculiar species of head-ache called the *megrim*. It is carefully to be distinguished from every other, because it demands a particular mode of treatment. We may call it the acute or accidental dyspepsia.

2. The second cause of dyspepsia is habitual full living, particularly the too *frequent* indulgence in animal food. This is one of the most common sources of dyspepsia in the upper classes of society, and is easily distinguished from all others by its occurring along with *gout*.

3. The third is the abuse of spirituous liquors. This is the prolific source of dyspepsia in the lower ranks of life, in comparison with which all the other causes of the disease are of little importance. Dyspepsia from this cause is often a very *severe*, and always an obstinate complaint. It is attended in most cases with a very acute pain in the region of the stomach, and tenderness of the epigastrium. It may be distinguished also by the trembling hand, which never fails to accompany it. This and the preceding form of dyspepsia may so far be considered as connected, as the remedy for the disease is in both cases obvious, and as any plan of treatment which does not make the removal of the exciting cause an indispensable condition, will be either ineffectual, or serve only in the end to aggravate the evil.

4. The fourth cause of indigestion is the want of air and exercise. Torpor and inactivity of the body naturally extend their influence to internal organs, and the stomach is the first to suffer. Hence it is that dyspepsia is the frequent conco-

mitant of a sedentary profession, and that it prevails, not only among the luxurious and dissolute, but amongst the most industrious and sober classes of the community. Distension of the stomach by wind, particularly after meals, eructations, and a torpid state of the bowels, usually prevail, and constitute the *urgent* symptoms in this form of the complaint. To a certain extent it admits of relief by remedies, but the least irregularity of diet is often sufficient to renew the unpleasant symptoms.

5. Another cause of primary dyspepsia may be found in excessive evacuations, such as flooding, and large bleedings at the arm; or in more moderate evacuations, if long continued, as, for instance, leucorrhæa, or protracted suckling. The practice of keeping strong children at the breast for a year and a half or two years is very common in the lower orders in this country, and leads, particularly in weak habits, to some of the most distressing forms of dyspepsia which are ever witnessed. The peculiar characters of this variety of dyspepsia are, a sense of *sinking* at the pit of the stomach, giddiness, dimness of sight, a feeling of different objects dancing before the eyes, a *small*, and often *imperceptible* pulse. It admits of very essential relief from medicine.

6. In the next place, dyspepsia may be traced in very many cases to the influence of cold and moisture. The general effect of cold, when long continued, is to depress the nervous power, and this is often manifested in the temporary loss of the functions of the stomach. Hence it happens that dyspeptic ailments are so frequently met with when the cold weather first sets in. This kind of dyspepsia may usually be distinguished by the thirst, the restlessness, the white tongue, and other marks of general though slight febrile disturbance which attend it. Its usual duration, when left to itself, is about three weeks or a month; and though several of the concomitant symptoms admit of essential relief by medicine, yet its course (in those weakly habits in which it commonly occurs) can seldom be much shortened. The symptom that most attracts the notice of the patient, and for which he specially solicits the aid of the physician, is loss of appetite.

7. The last source of primary dyspepsia which requires notice, is mental emotion, particularly the depressing passions, fear, grief, but above all *anxiety*. This, though very common, can only so far become a practical consideration, as it may lead

to the propriety of recommending, in some cases, change of air, of scene, and of habits, as essential to recovery. That such a cause is operating may generally be inferred from the circumstance of the dyspeptic symptoms continuing for a great length of time uninfluenced by medical treatment.

Secondary Dyspepsia. — The various *sympathies* of the stomach have frequently been described. They explain the intimate connection of dyspepsia with local disease in other parts. It has been well observed, however, that when a disordered state of the digestive organs, and local disease in a remote part, are concomitant, they may be but effects of some distant and unknown irritation, perhaps proceeding from the nervous system. The medicine therefore which appears to act beneficially on the local disease through the medium of the digestive organs, may in fact operate by correcting that more general derangement of the health, of which, disorder of the chylopoietic viscera is but one of the effects. Dyspepsia occurs symptomatic of habitual constipation, of chronic disease of the liver, spleen, uterus, kidney, and bronchia, aud of the chronic cutaneous affections.

1. Dyspepsia is in many instances accompanied by a costive state of the bowels, to which, when present, the patient himself is generally disposed to refer all his symptoms. The student, however, will remember, that the functions of the stomach and great intestines are very different, and that disturbances in them are by no means necessarily associated. Costiveness frequently exists without indigestion, and dyspepsia without constipated bowels. The contrary, indeed, sometimes happens; but whenever habitual costiveness is the *direct cause* of dyspeptic symptoms, the circumstance will generally be made manifest by the hardness or fulness of the abdomen, and by those inquiries into the present and *previous* state of the alvine evacuations which the practitioner will in no instance fail to make.

2. In some cases dyspepsia will be found dependent upon obscure diseases of the liver; but assuredly not to the extent which is frequently imagined. When a defective or vitiated state of the bile, that is to say, *functional* disturbance of the liver, exists; still more, when structural disease of that organ is present, accurate investigation will commonly lead to the detection of some of those symptoms formerly enumerated (page 299) as *characteristic* of hepatic affections.

3. There can be little doubt, that dyspepsia is, in certain instances, symptomatic of an affection of the spleen. It would be contrary to all analogy to suppose that this organ is not subject to some primary forms of disease; but very little appears to be known concerning them. It is probable, that a more intimate acquaintance with the physiology of the spleen might enable us to separate and refer to their true source some other cases now classed under the general head of dyspepsia. The peculiar symptoms of *splenic* dyspepsia, as far as I have been able to trace them, are fulness and sense of weight in the region of the spleen (without corresponding flatulence), a sallow countenance, loaded tongue, and occasional hæmorrhages. It chiefly occurs in young women, particularly in female servants who have over-exerted themselves, and is very obstinate and difficult of cure.

4. Dyspepsia is a frequent concomitant of disturbance in the uterine functions. It is a leading symptom in chlorosis and hysteria, and is well known as one of the earliest evidences of pregnancy. This form of the disease is easily distinguished from all others by the *habit of body* in which it occurs. Vomiting of the food half an hour after it has been taken (marking the great degree of irritability prevailing in the stomach) will generally be found characteristic of *uterine* dyspepsia.

5. Indigestion is a well-marked symptom in diseases affecting the kidney, the *local* evidences of which are often very obscure. Hence it is that the original complaint is sometimes overlooked; but the error is fortunately of no material importance. The functions of the stomach are frequently impaired in chronic affections of the bronchia, and this complication of disease is very formidable, particularly in old people. Lastly, a remarkable connection has long been observed between dyspepsia and several varieties of chronic cutaneous disease. When the eruption is most abundant, the stomach is in the best order. The recession of the eruption is followed by pain, flatulence, and the other evidences of impaired digestion.

Prognosis.—In all forms of dyspepsia the prognosis is favourable; even though of very long continuance it does not appear to induce any serious or permanent mischief. In particular habits it gives rise to, or aggravates, calculous disorders; but there seem no just grounds for an opinion entertained by some, that it lays the foundation of *organic* disease in distant parts, particularly in the lungs. The view which has been taken of its exciting causes will show that some cases admit only of temporary relief, but by far the larger proportion of dyspeptic patients may, by moderate attention to diet, medicines, and the regimen of mind and body, be permanently and effectually cured.

Treatment.—It is unnecessary to say, that there is no one drug which will fulfil the great object of treatment, that of giving *tone* to the weakened stomach of a dyspeptic patient. This can be attained only by measures calculated to avert the *cause* which may have excited the disease. The tone of the stomach never fails without some *assignable* reason, which strict inquiry will detect, and the knowledge of which will point out the proper means of relief. Nor is it often that these will fail of success, provided the patient have sufficient firmness to submit to them, and afterwards remain sensible that his health is in his own hands. The assistance of the physician, however, is very often required where the patient either *cannot*, or *will not* submit to the measures which prudence dictates. In such circumstances we must endeavour to aid the digestive process by *medicines;* but I would wish to impress upon the student the impropriety of trusting much to them in dyspeptic cases. He should remember, that almost any drug will injure digestion in a healthy state, and learn from hence to be sparing of medicine when the stomach is weakened by disease.

Diet.—In every form of dyspepsia attention to diet is *indispensable*, and the patient must have regard, not to its quality only, but to its quantity. In a weakened state of the stomach it must have little given it to do. The body is strengthened, not in proportion to the quantity of food taken in, but to that which is *thoroughly* digested. Differences in the habits of life will of course lead to important differences in the *kind* and quantity of diet which should be permitted to a dyspeptic patient; but the following may be regarded as rules of very general application. It should consist in a due mixture of animal and vegetable food, but the former should be eaten only *once* a day. It should be thoroughly masticated. Great varieties of food at any one time should be prohibited, as leading to an indulgence of the appetite beyond the wants of the system. Articles of difficult digestion should be carefully avoided; such as all kinds of smoked, hard, dried, salted, and long-kept meat; all those dishes where too much nutritious matter is collected in a small space; eggs, for instance, potted meats, strong soups, and preparations of suet, fat, and butter; lastly, all raw vegetables whatever, with the exception of ripe fruits. Regularity in the hours of meals should be rigorously enjoined, and the patient directed to abstain from food at *all other times.*

Regimen.—Of the necessity of regular exercise to the due performance of the functions of the stomach, every one must be fully sensible. Walking is of all exercises the best. It is that which nature intends for us, and can never be compensated by what are called the *passive exercises* of the luxurious. Pure air is eminently conducive to healthy digestion.

Medicine.—The objects to be kept in view in the treatment of primary dyspepsia are, first, to free the stomach from offending materials, secondly, to improve the tone or energy of the stomach, and thirdly, to relieve painful and distressing sensations. The medicines calculated to fulfil these several intentions are emetics, purgatives, mild laxatives, bitters and stimulants, absorbents, mercurial alteratives, and narcotics. I proceed to point out to what cases each of these classes of medicine applies, and upon what principles they may be supposed to act. Much of what is important in regard to treatment resolves itself into the avoiding of *exciting causes*; but it is necessary also to keep in view the duration of the disease, or the difference between *occasional* and *habitual* dyspepsia. Lastly, attention is to be paid to the degree of *strength* in the patient's general habit.

1. In the *acute*, or occasional dyspepsia, the object is to free the stomach at once from offending matters, and afterwards to permit it gradually to recover its tone. Where full vomiting has not taken place by the efforts of nature, a scruple of ipecacuanha may be given, followed the next morning by an aperient draught. This is one of the cases of dyspepsia to which emetics are applicable. Their frequent use is undoubtedly to be condemned, as weakening the tone of the stomach, and ultimately increasing the disease. There is one other occasion when the aid of an emetic is required, namely, when long continued indigestion has led to the collection of a thick

and vitiated mucus, which adheres strongly to the coats of the stomach, and impedes the due action of aperient medicines.

2. Occasional brisk purgatives, such as the common senna draught, or half a drachm of rhubarb, or ten grains of the cathartic extract, will be found highly advantageous in dyspeptic cases which are not of long standing, and which occur in persons of robust habit. Half an ounce of Epsom salts in two ounces of warm water, or a Seidlitz powder, is often sufficient to carry off a mild attack of the complaint. Where any considerable degree of feverishness exists (provided the stomach be not *irritable*), much advantage will be derived from the combination of calomel with the extr. coloc. compositum. Calomel, as a purgative, is well adapted to *sudden* attacks of dyspepsia in persons not habitually liable to it. In weakened habits, it frequently irritates the stomach and aggravates the symptoms.

3. Laxatives, in small doses just sufficient to keep up a gentle peristaltic motion through the whole alimentary canal, are highly serviceable in *common* or habitual dyspepsia. Small doses of rhubarb, in conjunction with an aromatic, taken a short time before a meal, prove useful to persons of weak stomach and sedentary occupation, by preventing a lodgment of food in the stomach and duodenum after the first processes of digestion are over. Such combinations are familiarly known by the name of dinner pills, or digestive pills. Aromatic and bitter aperients in moderate doses constitute the chief means of relief in dyspeptic cases. A weak infusion of cascarilla and rhubarb, or of gentian and senna, may be taken twice a-day. The compound decoction of aloes and myrrh is well adapted for the treatment of dyspepsia. If the form of pill be preferred, the pilula rhei composita of the Edinburgh Pharmacopœia is the best that can be employed. The pilula aloes cum myrrha, and the pilula cambogiæ composita, may also be recommended.

4. Bitters, astringents, stomachics, aromatics, and other stimulating medicines, known under the general denomination of *tonics*, have been extensively employed in cases of dyspepsia; but they too frequently disappoint the expectations of the physician. It must be recollected, that even the lightest bitters (camomile, orange-peel, or gentian) are stimulant and *heating*, and therefore wholly inapplicable to those numerous

cases of dyspepsia which are connected with a *feverish* and *irritable* habit of body. The following plain maxims for the employment of such medicines may perhaps be of some use. Bitters are adapted to those forms of dyspepsia in which the tone of the stomach has been weakened by previous disease, or by long and severe evacuations. In that kind of dyspepsia which arises from the habitual use of spirituous liquors, bitters are sometimes borne, but the gentler stimulus of an acid is often preferable; as thus:—

℞ Infusi gentianæ compos. ʒiij.
Aquæ carui, ʒvj.
Acidi nitrici diluti, ♏ x.
Syrupi, ʒj. Misce.
Fiat haustus ter die sumendus.

In the weakened state of stomach which occurs to women who have suckled an infant too long, recourse must be had to the more powerful of the class of tonics. The mistura ferri composita, in doses of ten drachms three times a day, is very efficacious in such cases, a gentle emetic powder being first premised, to clear the stomach of tenacious mucus. The sulphate of iron may be substituted, either in the form of pill or draught. Bark and quinine are useful under like circumstances. When the stomach is very irritable, so that pain is occasioned by taking any thing *warm* into the stomach, the aromatic confection is singularly beneficial. Where faintishness, languor, and the feeling of sinking at the stomach are urgent, we may direct a teaspoonful of some cordial, such as a mixture of sal volatile and lavender drops; or five grains of subcarbonate of ammonia may be added to the daily draught, or a teaspoonful of ether; or, without the formality of a prescription, some ginger may be taken at the time of meal. The power of any stimulant in promoting digestion *to a certain extent*, is well known, and may legitimately be turned to advantage in the treatment of dyspepsia.

5. Absorbents, as lime-water, magnesia, and the carbonate of soda, may be combined with other medicines, where heartburn and acid eructations are particularly distressing; but it must be remembered, that their good effects are always transitory, and often precarious, and that they can never be relied on for the *permanent* removal of the disorder.

6. Mercurial preparations are frequently resorted to in *simple*

dyspepsia, not as purgatives, but in small doses, for their specific, or, as it is said, *alterative* effect upon the secretions of the body. Three grains of the blue pill, given at bed-time, prove serviceable where the stools are clay-coloured. Small doses of calomel at night, or of Plummer's pill, may be directed, where the general languor gives evidence of defective secretion or torpidity of the liver.

7. There are certain medicines employed for the cure of dyspepsia, whose agency is apparently upon the nervous system. Of these I may specify the oxyd of bismuth, given in the quantity of five grains three times a day, with ten of the compound powder of tragacanth; the sulphate of zinc in small doses; and the hydrocyanic acid. They deserve a trial in severe and obstinate cases. Opium, or the extract of hyoscyamus, are requisite when the stomach is very irritable, or when severe pain is complained of. I have never observed, however, that opium possesses that decided power of checking inordinate secretion of the gastric juice which Dr. Pemberton attributed to it. Blisters applied to the pit of the stomach are often useful where there is tenderness of the epigastrium with disposition to vomiting.

8. Lastly, much may be done towards the cure of obstinate indigestion by change of air and travel. Where the circumstances of the patient admit of it, this last resource of medicine should never be neglected. It seems to act as a general tonic, invigorating the whole frame, improving the quality of the blood, and stimulating every organ to a more healthy performance of its office.

Such are the most important means by which we attempt the relief of indigestion, whether idiopathic, or secondary. In most cases we combine in one formula, two, three, or more of the medicines now recommended; as, for instance, an aperient, an aromatic, a stimulant, and an absorbent. The following draughts are framed on these principles, and may be taken as specimens of the general mode of prescribing in dyspeptic disorders:—

℞ Infusi cascarillæ,
——— rhei, *aa* ʒiij.
Aquæ cinnamomi, ʒiv.
Ammoniæ subcarbonatis, gr. iij.
Syrupi aurantiorum, ʒj. Misce.
Fiat haustus bis indies sumendus.

℞ Infusi caryophyllorum, ʒix.
Magnesiæ sulphatis, ʒj.
Elixir vitrioli, ♏ v.
Tincturæ aurantii, ♏ xv.
——— cardam. compos.
Syrupi aurantiorum, *aa* ʒj. Misce.
Fiat haustus bis indies sumendus.

℞ Sodæ carbonatis, gr. xv.
Tincturæ humuli,
——— cardam. compos. *aa* ʒss.
——— rhei, ʒj.
Aquæ cinnamomi, ℥j.
Syrupi zingiberis, ʒj. Misce.
Fiat haustus bis indies sumendus.

ORGANIC DISEASES OF THE STOMACH.

The most dangerous of all the diseases of the stomach is that of organic lesion of its coats. Ulcers of the stomach (sometimes partaking of a cancerous nature), stricture of the cardiac orifice, and scirrhus of the pylorus, are the common appearances on dissection. The symptoms will, of course, vary with the situation of the organic disease. In the case of scirrhous thickening and consequent *stricture* of the pylorus, the symptoms are pain, often very acute, shooting to the back, and aggravated by taking food; vomiting, generally occurring from one to three hours after a meal, the matter rejected being for the most part dark-coloured; and, lastly, emaciation. These distressing cases are sometimes very rapid in their progress, at other times tedious, equally resisting, however, every plan of treatment that can be devised.

Dr. Pemberton has remarked, that it is not very uncommon to find extensive mischief in the structure of the stomach, without the constitution being sensibly affected by it; that is, provided the disease be so situate as not to interrupt the passage of the food.

Nothing appears to be known regarding the *causes* of organic disease of the stomach, further than that it is connected with an advanced period of life.

Erosions or perforations of the stomach, without thickening of its coats, or any surrounding inflammation, have been occasionally found upon dissection; and they were attributed by John Hunter, to solution of the stomach in its own juices *after death*. More recent observations, however, have tended to show, that such an occurrence sometimes takes place *during life*; more especially in infants. The circumstances, however, which favour it, are not well understood, nor can the occurrence be anticipated with any degree of certainty.*

CHAP. II.

CHRONIC DISEASES OF THE LIVER.

Outline of the Pathology of this Disease. Great obscurity still pervading it. Causes of Jaundice. Of Gall-stones, and the Symptoms occasioned by them. Jaundice idiopathic and symptomatic. Symptoms of idiopathic Jaundice. Prognosis. Principles of Treatment. Chronic Pain of the Side in Females, or Hepatalgia. Nature and Treatment of this Affection. Of Torpid Liver. Of Tuberculated Liver.

The principal chronic diseases of the liver are jaundice, hepatalgia, torpid liver, and tuberculated liver. Of these, jaundice is both the most interesting and the most frequent.

JAUNDICE.

Many very intricate questions, both in physiology and general pathology, are intimately connected with the consideration of jaundice. How far the further advances which science is destined to make will throw light upon these, and consequently upon the nature and treatment of the several varieties of jaundice, it would be in vain to conjecture. It is sufficient for my purpose, if the student, in entering upon the investigation of this disease, is thoroughly convinced of the difficulties which assail him at the very threshold of inquiry, and is content, therefore, with those qualified and imperfect opinions concerning it, which are alone consistent with the present state of our knowledge. As this notion may perhaps appear to some overstrained, and hardly compatible with the ideas commonly entertained on the subject, it may be right to begin by pointing out briefly the different physiological difficulties which will meet us in the several steps of our progress.

Jaundice obviously arises from some obstruction to the passage of the bile into the intestines; but to understand correctly in what manner this takes place, and to appreciate fully the symptoms which accompany it, we ought to be tolerably well-informed of the mode in which the bile, in a state of health, passes through its ducts; of the use of the gall-bladder; of the use of the bile; and of the extent to which the nerves influence the secretion of the bile. None of these points have been determined with that degree of accuracy which is desirable; but, obscure as they are, there is at least equal difficulty attaching to most of the *pathological* discussions into which we shall soon be led.

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* For farther information on this curious point in pathology, see a paper by Dr. Gairdner, in vol. i. Transactions of the Medico-Chirurgical Society of Edinburgh, page 311.

In all systems of nosology, different *species* of jaundice have been described; but in many cases it would appear as if the ingenuity of authors had rather been displayed in enumerating the several ways in which obstruction *might* take place, than their experience adduced in determining which of them are the most frequent and important in practice. An useful distinction may, in the first place, be drawn between those cases of jaundice which arise from *mechanical* impediments to the natural course of the bile, that bile being secreted of a healthy quality, and such as are connected with *impaired* function of the biliary ducts, the secretion of bile being more or less faulty. To the first class belong, 1. The passage of gall-stones. 2. Enlargement of neighbouring organs. 3. Accumulations in the duodenum. To the second class belong, 1. Spasm of the ducts. 2. Inflammation of their coats. 3. Preternatural viscidity of the bile, with *atony* of the ducts. Each of these will require separate investigation.

1. *Gall-stones.*—Some physicians have attempted to simplify the pathology of jaundice by ascribing all cases of it to the passage of gall-stones. Dr. Heberden, whose account of the *symptoms* of the disease is so generally accurate,* seems to have acknowledged no other cause for it; and Dr. Cullen's views were warped by a similar persuasion. That it is an *occasional* source of jaundice must undoubtedly be acknowledged; and therefore it becomes an object of importance to inquire into the *nature*, *origin*, and *consequences* of gall-stones. It should, however, be well understood at the outset, that the connection between jaundice and gall-stones is more *accidental* than *essential*.

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* Commentarii de Morborum Historia et Curatione. Lond. 1802.

Biliary calculi do not appear to differ in any essential characters from each other. They are composed either of inspissated bile, or of a peculiar animal principle, found in the bile, called *cholesterine*. They are usually of a brown colour, and have a polygonal shape, occasioned by mutual pressure. Internally they exhibit a chrystalline structure. Biliary concretions are always formed in the gall-bladder. The circumstances which determine their formation there are not well known; but a life of indolence seems particularly to predispose to them. They are much more frequent in women than men, and are chiefly met with in those who have passed the middle and active period of life. They vary greatly in size. The largest I ever saw weighed 380 grains (ʒvj & ℈j), and was passed by stool. The largest calculus on record is that described by Mr. Blagden, in the Medical Transactions of the College of Physicians,* which weighed an ounce and a quarter. It was discharged externally from an abscess in the parietes of the abdomen. Its length was three inches and a half, and its circumference three inches and a quarter. Some calculi described by Mr. Brayne weighed respectively 162, 176, and 159 grains.† The average weight of a calculus of ordinary size, which the ducts will readily admit, is 25 grains. When the calculi are of very small size they are often very numerous. In the Hunterian Museum a gall-bladder is preserved, containing a thousand calculi.

Passage of the gall-stone.—Impacted in the gall-bladder, biliary calculi are productive of no inconvenience. They are often found, upon dissection, where no symptoms during life had given occasion for the least suspicion of their existence. When, from some cause unknown to us, they pass into the ducts, especially if their size be large, they create intense pain in most cases, and jaundice, for a time at least, in all. The pain is usually felt about the pit of the stomach, and is often described as more excruciating than that which attends acute inflammation, even in the most sensible parts of the body. The pain recurs at intervals. When the pulse is felt during one of these severe attacks, it is perhaps found to be accelerated in a very trifling degree; but generally, it is not more frequent than in health, and sometimes it is even slower.* There are present also, at the same time, nausea, vomiting, thirst, extreme languor, and obstinate constipation, continuing for four or five days after the descent of the calculus into the bowels.

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* Vol. iv. p. 181.

† Medico-Chirurgical Transactions, vol. xii. pages 257 and 260.

The further progress of the disorder is subject to considerable variety. In some cases the gall-stone passes through the ducts in the course of six or eight hours, when complete remission of the pain takes place. In other cases it meets with great difficulty in its passage through the ducts, depending partly on the size of the calculus, partly on the irritability, or other circumstances of the patient's habit and constitution. A gall-stone of moderate size may become so impacted in the ducts as to cause death by the intense suffering and incessant vomiting to which it gives rise.† On the other hand, biliary calculi of extraordinary dimensions have been passed without exciting any constitutional disturbance.‡ In a few cases the calculus is discharged externally through an abscess generally situate between the epigastrium and navel. An instance of this kind once fell under my own observation. On extracting the gall-stone, the ulcer healed up, the jaundice went off, and the patient, who had suffered excessively for several months, recovered rapidly. In some cases these large calculi are passed *per anum.*

It has been made a question whether the gall-ducts are sufficiently dilatable to allow a calculus of large size to pass through them; and whether it be not more reasonable to suppose, that it ulcerates its way directly into the colon or duodenum. Mr. Brayne has recorded a case§ in which dissection proved distinctly that this process had taken place; but whether it be the rule or the exception is one of the many points in the pathology of jaundice still open to question. The ducts undoubtedly dilate after repeated attacks, so as to allow calculi of moderate size to pass through them with comparative facility.

2. Enlargements of neighbouring parts, such as schirrhus of the pancreas, and scrophulous tumours of the mesenteric glands, have occasionally been found after death so situated as to press on the biliary ducts, and to obstruct the passage of

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* Baillie's Morbid Anatomy, p. 268.

† London Medical Gazette, vol. xiv. page 201.

‡ Ibid. vol. 14, page 199.

§ Medico-Chirurgical Transactions, vol. xii. page 261.

the bile. In some cases, during life, the same thing may reasonably be *presumed* to have taken place, from observing jaundice in connection with scrophulous disease of the inguinal or cervical glands.

3. There is reason to believe, thirdly, that impediments to the course of the bile, occasioning jaundice, have in many cases existed in the duodenum; and we can readily understand how mucus or sordes accumulated there may so press on, or clog the mouth of the common duct as to produce such an effect. The opinion is rendered probable by the rapidity with which the disease sometimes yields to a single dose of purgative medicine. It is not unlikely that infantile jaundice, the *yellow gum* of the lying-in room, has its origin in such a cause.

4. Spasm of the gall-ducts is another cause of obstruction strongly insisted on by some, and as strongly denied by others. The arguments in favour of such an opinion are, that jaundice has been observed to attend hysteria, and other spasmodic affections; that occasionally its attack is transitory; and frequently, where the disease proves fatal, dissection fails to show any concretions, or mechanical impediment to the passage of bile. The only one of these arguments that can be relied on is the first; but the combination of hysteria and jaundice is so very rare, that it should rather be viewed as an accidental circumstance, than as tending to establish a great pathological principle.

5. A much more probable occasion of obstruction to the descent of the bile is inflammatory action in the coats of the ducts, either originating in them, or spreading to them from the liver, or from the mucous surface of the intestinal canal. The grounds on which such a proximate cause of jaundice has been built appear to me well established, and they are important, as bearing immediately on practice. It has been observed, that jaundice often arises from exposure to cold, more especially from taking large draughts of cold water while the body is overheated; that it begins, under such circumstances, with rigors, and is attended with many symptoms of general fever; that it is frequently complicated with *tenderness* of the epigastrium, or of the right side; and that after death, inflammation of the liver, or of the mucous coat of the intestines

(and their consequences), have been sometimes distinctly traced.*

6. Preternatural viscidity of the bile has frequently been adduced as the cause of jaundice, and the opinion has been supported by the tenacious and pitchy stools which are often passed after the obstruction has been removed. It is highly probable, that some of the milder cases of jaundice, beginning without pain, and attended with general sluggishness in the action of the stomach, bowels, and heart, and torpor of the whole nervous system, have really such a state of the biliary secretion for their proximate cause. Hardly anything is known regarding the causes of this morbid condition of the bile. It has been stated to arise from indolent habits, as well as the too free use of ardent spirits. I have frequently observed it in opening the bodies of those who die during the autumnal months, and it appears to be concerned in the peculiar character of the fevers of that season.

7. Jaundice is often met with as one of the symptoms of diseased liver, and upon dissection no mechanical source of obstruction in the ducts can be detected. These are the cases to which nosologists have given the name of *icterus hepaticus*. No very defined views have ever been taken concerning its nature. The most reasonable explanation of the phenomenon is, that the ducts participate in the general disturbance of function throughout the hepatic system, and that they are in a state of atony, or inaction.

8. To complete that brief outline of the general pathology of jaundice which it is my object here to give, I must advert, lastly, to the curious but well-ascertained connection existing between it, and certain states of disease in the brain and nervous system. From the earliest periods of medicine we find such an opinion avowed, and it may be illustrated in a variety of ways. Jaundice has been observed in many cases to arise most incontestably from mental emotion, more especially from intense domestic grief. It is frequently complicated with decided proofs of disease of the encephalon, and in severe cases it has been observed to prove fatal by the supervention of *apoplexy*. Inflammation and abscess of the liver, and jaun-

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* See a paper on "Jaundice," by Dr. Marsh, in the Dublin Hospital Reports, 1822, vol. iii. pp. 298 and 302.

dice, have often succeeded to injuries of the head. The fevers of hot climates, in which the brain and nervous system are so deeply involved, are frequently complicated with yellowness of the skin. These phenomena probably admit of no more precise explanation than that of mutual sympathy existing between the brain and all parts of the animal economy. If, indeed, we could place any reliance on that theory, which makes secretion a mere separation from the blood, and which considers bile as existing at all times in that fluid, it might be said, that in these cases there exists some oppressed state of the brain, which suspends the functions of the liver, and causes an accumulation of bile in the blood-vessels. With reference to prognosis they are of much importance to the observing physician.

The views which have now been taken of the pathology of jaundice, lead to the distinction of it into the two great classes of idiopathic and symptomatic. Idiopathic or genuine jaundice is that which commences with yellowness of the skin, and is attended with constitutional symptoms obviously referrible to the morbid course which the bile takes. Symptomatic jaundice, on the other hand, is that in which yellowness of skin occurs subsequent to, and is in its progress complicated with, unequivocal evidence of local disease, either in the liver or in some distant part. In describing the symptoms and progress of jaundice, I of course confine my attention to the idiopathic form of the disease.

Symptoms.—The only symptoms necessarily present in every case of jaundice, are discoloration of the skin and urine, and a corresponding absence of the natural colour of the stools. These vary, however, greatly in intensity. Sometimes the yellow tinge is so slight as to be perceptible only in the conjunctiva. At other times the whole skin becomes deeply imbued with it. Popular opinion long ago divided jaundice into three kinds, the yellow, the green, and the black, according to the intensity in the colour of the skin; and with it Dr. Baillie's experience (recorded in the College Transactions*) in some measure coincides. He considers the *green jaundice* as a less frequent, but much more severe form of disease than the common or yellow jaundice. It is in most cases connected with an enlarged, hard, or tuberculated state of the liver. The progress of the disorder is slow, but its fatal issue is almost certain.[*] In a few instances persons have lived for many years (enjoying even tolerable health) with the green tinge of bile in the skin. After a time, however, the body becomes emaciated, dropsy perhaps supervenes, the powers of the constitution give way, and at length sink altogether.

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* Volume v. p. 143.

In all the varieties of jaundice the stools are pale, and the urine loaded with bile, so as to tinge linen which is immersed in it of a yellow colour, more or less deep according to the severity of the case. Other secretions, however, are said to be similarly impregnated, especially the saliva, and the perspirable matter. This however is doubtful. The milk of a jaundiced nurse, at least, is never discoloured. The yellow dye pervades the internal parts of the body, but it does not appear to attach itself equally to all structures. The substance of the brain has never, as far as I know, been found to assume the yellow hue. In like manner it will be observed, even in very severe cases, that the upper surface of the tongue is not perceptibly affected, although its lower surface may be deeply tinged. Much ingenuity has been displayed in ascertaining, by experiment as well as by reasoning, how the bile gets into circulation; whether by the medium of the thoracic duct, or by the hepatic veins; by absorption, that is to say, or regurgitation. The determination of this point is of no importance to the pathologist. It merges in the more general questions connected with the physiology of absorption.

But independent of symptoms obviously referrible to the presence of bile in the circulation, there are others of a different character, very frequently met with in jaundice, such as languor and lassitude; lowness of spirits, an itching of the skin (often exceedingly obstinate and troublesome), a sluggish pulse, and great debility. Jaundice too is commonly attended with the usual marks of indigestion; loss of appetite, flatulence, and acid eructations. It is generally stated, and as generally believed, that costiveness is a necessary consequence of a want of bile in the alimentary canal; and it has hence been argued, that the great use of the bile is to *stimulate* the intestines. But the fact is not so. Very often the bowels act as under common circumstances, and sometimes diarrhœa prevails. In

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[†] Of all the cases of green jaundice which fell under Dr. Baillie's notice, he remembered only two that recovered.

one case which I attended, the mucous secretions from the bowels were so dark and depraved, as to give to the motions the appearance of being tinged by *bile*.

It is certainly a singular circumstance, that in some cases, where, judging from the colour of the skin and of the evacuations, the disease must have gone to a great extent, the general system has yet not at all sympathized. I have seen young persons continue busily engaged in an active employment—their appetite, sleep, pulse, and tongue, remaining healthy, where yet the jaundiced colour of the skin was intensely deep. This appears to prove, that the mere presence of bile in parts not destined to receive it is of no serious detriment to the system, and that many of the constitutional symptoms attending jaundice are attributable to some *ulterior* cause. It concurs too with many other phenomena of this disease, in leading to the belief, that the bile, while circulating in the blood-vessels, is still capable of exerting a degree of influence over the digestive process. In no other way can we satisfactorily account for the nutrition of the body so often going on but little disturbed, even in obstinate cases of jaundice.

Prognosis.—The remarks already made will preclude the necessity of detailing minutely the usual progress, and of laying down the prognosis in this disease. Almost every thing depends, as Dr. Heberden remarked, on the circumstance of the liver being in a healthy or morbid state. If jaundice arises from simple obstruction of the biliary ducts, and if the bile continue to be secreted of a healthy quality, it is a disease of little or no danger. Hence it happens, that the jaundice of infants and young persons so generally ends favourably, while that which occurs in advanced life is very often the precursor of worse evils, dropsy and apoplexy, and in fact becomes one of the strongest evidences of a broken-down constitution. No definite period can be assigned for the continuance of the disease. It frequently recurs in those who have once suffered an attack of it.

Treatment.—The works of medical authors are not wanting in remedies for the jaundice; but some of them are very inert, and others of such opposite characters, that it is difficult to suppose they can be productive of any real benefit. If the views which have been here taken of the pathology of jaundice be correct, it is easy to perceive that the treatment must vary essentially in the different varieties of the affection. All that I now propose, is to offer a few reflections on the general principles which have usually guided physicians in their attempts to afford relief in this obscure disease.

I need hardly remark, in the first place, that where the nature of a disease is little known, symptoms must be the guide to practice. Where jaundice occurs, therefore, without giving rise to any local pain or constitutional disturbance, we should *abstain* from medicine, and allow nature to work the cure. Where pain is urgent, it must, if possible, be relieved; and when it is reasonable to presume that pain depends on the passage of a gall-stone, opium must be resorted to. Two grains of opium in the solid form, or forty drops of the liquor opii sedativus, may be given in the first instance, and repeated according to the urgency of the symptoms. Fomentations should be applied to the epigastrium. A warm bath is sometimes of great use; and under very aggravated circumstances, blood must be taken from the arm. A brisk purgative is often of essential service in the jaundice of young persons, and during the passage of a gall-stone, as well as for many succeeding days; but a continued exhibition of aperient medicines, under the impression of thus affording a substitute for the natural stimulus of the bile, has been productive of serious inconvenience. An emetic, in like manner, has sometimes proved useful, apparently by emulging the biliary system, but in most instances it is of little or no avail.

A generous diet, cheerful company, change of scene, and moderate exercise in the open air, especially riding on horseback, by promoting the general health, will go far towards effecting a cure in obstinate chronic cases, and are frequently preferable to the best-regulated course of medicine. The dyspeptic symptoms under which the jaundiced patient so often labours, sometimes admit of relief by the moderate and judicious use of bitters and aromatics.

The great desideratum, however, has been to discover a medicine which has the power of dissolving the biliary calculus, or at least of altering that morbid condition of the bile which leads to the formation of the gall-stone. *Specifics* for the jaundice were at one time in great vogue, but of late they have been deservedly neglected. The remedies which are now chiefly trusted to for resolving the obstruction are alkalis, soap, the nitric acid, taraxacum, the natural mineral waters, especially those of Cheltenham, their artifical substitutes, and lastly, mercury.

Of the influence of mercury in certain states of diseased liver with which jaundice is often associated, I have already expressed my opinion, and in such a combination of disease this remedy may unquestionably be employed with advantage; but in simple jaundice from obstructed ducts, it is difficult to understand on what principle it can legitimately be resorted to.

Lastly, the practitioner will bear in mind, with a view to practice, that jaundice sometimes presents itself under the aspect of an inflammatory affection; and he will see the propriety of treating such cases by local blood-letting, fomentations to the side, and saline aperients.

HEPATALGIA, OR CHRONIC PAIN OF THE SIDE.

Symptoms and causes.—This is a chronic complaint, characterized by severe pain in the side and region of the liver. It is peculiar to females from the fifteenth up to the thirtieth year of life. It is extremely tedious and difficult of cure, recurring often with unconquerable obstinacy for a series of years, until some change in the constitution has brought with it a natural cure. From its leading symptom, it received from Sauvages the appropriate name of hepatalgia; but as the seat of pain is often on the left side of the body, that of laterodynia is perhaps more applicable. Of its intimate nature little or nothing is known with certainty. That it is not of an inflammatory character may be inferred from its duration, from the absence of constitutional excitement, and from the small benefit which blood-letting affords. Some pathologists consider the affection as of a rheumatic kind. I have often been inclined to view it as depending in some degree upon a distended state of the gall-bladder. To this opinion I am led, first by the circumstance of its occurring frequently in young women of sedentary occupations, or of inactive habits; secondly, from its being sometimes accompanied with a waxy or sallow expression of countenance, analogous to that which occurs in jaundice; and thirdly, from the benefit afforded by such medicines as excite the torpid action of the liver and its ducts.

I am well aware, however, that it is also a frequent complaint with young women who have over-exerted themselves, and that the left side is perhaps as often the seat of pain as the right.

It will therefore be more consonant with sound pathology to consider this affection as depending upon a distended state of the vessels of the liver, spleen, and neighbouring parts. It is sometimes accompanied with hæmatemesis, and other marks of irregular distribution of blood. In many instances, it will be found to concur with a deranged, or perhaps completely obstructed state of the menstrual function. Costiveness is an almost invariable attendant upon the disease, and not unfrequently the most powerful purgative medicines fail of their accustomed effect.

Treatment.—This complaint, though very distressing, is not dangerous. When the pain is very urgent, relief is obtained by the application of leeches to the side, of cupping glasses, and of blisters. Occasionally it is necessary to take ten ounces of blood from the arm. Purgative medicines of an active kind are indispensable in the treatment of this affection. The daily use of some bitter aperient, or the sulphate of magnesia in the infusion of roses, should be directed. In some cases the complaint appears to be altogether a *nervous* affection, and is relieved by the application of a belladonna plaster, and the internal use of some mild narcotic, such as the extract of conium or hyoscyamus. Electricity may be tried with some prospect of advantage. Much benefit is derived from regular exercise, either on foot or horseback; and change of climate has proved in many instances, efficacious, not merely in the relief, but even in the permanent cure of the complaint.

TORPID LIVER.

A state of torpor or inactivity is supposed by some physicians to be one of the modifications of disordered function of the liver. The symptoms said to indicate such an affection are white, or clay-coloured motions, without jaundice, but with general torpor of the whole frame. The spirits are depressed, the pulse languid, the bowels sluggish. Dyspepsia is often present. With these symptoms, others of an anomalous or neuralgic character are often associated. I have seen all the symptoms of tic doloureux present in such a case, and yielding when a copious flow of bile has been procured. Headache and vertigo attend such a state of the hepatic functions. A disposition to *sloughing boils* is sometimes seen accompanying, and probably depending upon torpidity of the liver. In some of these cases bile is secreted, but it is viscid, acrid, and otherwise of vitiated quality.

The cure of torpid liver is effected by the continued use of aperient medicines. A pill containing four or five grains of the extract of colocynth, with a proportion of calomel or of the blue pill, should be taken every night, or every other night; and a bitter aperient draught the following morning; such as—

℞ Infusi sennæ compos. ℥j.
——- gentianæ compos. ʒiij.
Sulphatis magnesiæ, ʒij.
Tinct. cardam. compos. ʒj.
Spt. amm. compos., ♏xx. Misce.
Fiat haustus mane quotidie sumendus.

TUBERCULATED LIVER.

The liver is subject to various forms of organic disease, which arise, so far as is yet known, independent of common inflammation. The chief of these are hydatids, and the several varieties of *tubercle*, viz.:—the common yellow tubercle, the white tubercle, the black or melanoid tubercle, and the scrophulous tubercle.* A few observations on the most frequent variety of tuberculous degeneration of the liver, may afford some useful hints to the student.

The common tubercles of the liver are of a rounded shape, of a yellowish or brown colour, and occupy generally its whole extent. They always give an appearance of irregularity to the surface of the liver. They are usually of the size of hazel nuts, but are occasionally both larger and smaller. A liver studded with tubercles is generally harder to the touch than natural, but not often larger. Its colour is frequently yellow, from the bile accumulated in its substance.

The most common cause of tuberculated liver is spirit drinking, but occasionally it shows itself in persons not of intemperate habits. It is more common in men than in women. It is unknown as a disease of early life. The symptoms by which we judge of the presence of tubercles in the liver are, uneasiness in the region of the liver, permanent jaundice, dropsy, and that peculiar sallow expression of countenance expressive of deep-seated organic disease. The age and habits of the patient will assist in the diagnosis. In some cases the irregular knotted character of the anterior surface of the liver can be felt in an attentive examination.

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* See Baillie's Morbid Anatomy.

Medicine affords but little aid in removing the tubercular disorganization of the liver in drunkards. Purgative medicines will sometimes reduce the dropsy which attends it, but in most instances the disease slowly advances, and being, in a large proportion of cases, associated with other organic lesions, contributes, with them, to the fatal result.

CHAP. III.

CHRONIC DISEASES OF THE SPLEEN.

Imperfect state of our knowledge respecting the pathology of the Spleen. Probable uses of the Spleen. Its several disordered conditions. Acute splenitis. Congestion of the Spleen. Permanent enlargement. Treatment of the congested, and of the permanently enlarged Spleen. Softening of the Spleen with hemorrhage.

The observations of authors upon the diseases of the spleen are neither numerous, nor distinguished by much precision. In this country such complaints are not common, and we can therefore hardly be surprised that this branch of pathology has been comparatively neglected by British practitioners. For the most accurate information concerning it which has hitherto appeared, we are indebted to Indian experience; and especially to that of Mr. Twining, recorded in the Transactions of the Medical and Physical Society of Calcutta.* The following observations on the principal forms of chronic disease of the spleen, particularly as they occur in hot climates, are drawn in a great measure from his valuable paper.

The office of the spleen in the animal œconomy has never yet been so distinctly ascertained, as to preclude all ambiguity; but the opinion most generally received among pathologists, attributes to this organ the duty of a safety-valve to the vascular system. It may be considered as a basin held by the hand of nature to receive a large quantity of blood, at a moment when over-distension would cause disease, or death, the rupture of a blood-vessel, or even of the heart itself. This might happen, either when the cutaneous circulation is repressed by extreme cold applied to the surface, or during the cold stage of

* Vol. iii. page 351.

intermittent and remittent fevers; also in the case of running, hard riding, violent laughing, or any tumultuous agitation of the mind. The cellular structure of the spleen, and the large size of the artery which supplies it with blood, correspond perfectly with this hypothetical view of its function.

From these observations the student will deduce a ready explanation of the two principal facts in the pathology of splenic diseases:—1. Their connection with intermittent fevers, and dependence upon malaria. 2. The liability of the circulating system to hæmorrhagy during the presence of splenic disease. These circumstances have long been known, and the explanation of them, which physiology suggests, appears both simple and satisfactory.

The spleen is liable to several conditions of disease, of which the following are, in a practical point of view, the most important:—1. Acute inflammation of the substance of the spleen, and its consequences, adhesion, and suppuration. 2. Congestion of the spleen. 3. Hypertrophy, or permanent enlargement of the spleen. 4. Softening of the spleen, with disposition to hæmorrhage. On each of these forms of splenic disease, I shall offer a few observations.

1. *Acute splenitis.*—Of this disease a remarkable instance has been recorded by Dr. Ley, in the Transactions of the College of Physicians of London.* The texture of the spleen was in this case so altered as to resemble an extremely soft piece of sponge, of which the cells had been filled by an intimate mixture of pus and grumous blood. The symptoms during life indicated abdominal inflammation generally, but nothing occurred to point out the precise seat of organic mischief. This disease is very rare. Dr. Baillie mentions it only as occurring to the observation of others.

2. *Congestion of the spleen.*—Dr. Bree has treated of this disease as observed in England, in two memoirs published in the Medico-Chirurgical Transactions.† He notices, among its chief features, pain of the left side, inability to lie on the right side, with slowness of the pulse and torpid bowels. Its exciting cause is cold. A turgid condition of the vessels of the spleen may continue for many months without fever. After a certain

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* Vol. v. page 304.

† Vol. ii. p. 84, "On painful Affections of the Side from tumid Spleen;" also vol. iii. p. 155.

[illegible] peritonæal surface of the spleen becomes [illegible] symptoms assume a more inflammatory [illegible] breathing and giddiness are superadded, [illegible] of the disease, to the symptoms already [illegible] considers that active purging (especially [illegible]), long and steadily persevered in, consti- [illegible] treatment of congested spleen.

[illegible] no doubt that repeated over-distension of the [illegible] endured with impunity. It gives rise to a morbid [illegible] the spleen, and a tumid condition of its vessels. [illegible] its contractile power is lost, or much diminished. [illegible] condition of the spleen, unless remedied, leads on to [illegible] induration of the organ.

[illegible] Twining has been at great pains to show, that the [illegible] engorgement of the spleen, so common in tropical [illegible] agues, will not bear the active mercurial treat- [illegible] hepatic obstructions admit of. Mercury, in such a [illegible] disease, often induces alarming debility and depression [illegible] power, evinced in a tendency to sloughing of the lips and [illegible] cancrum oris), sometimes ending fatally. He recommends [illegible] cure should be entrusted to a course of purgative medi- [illegible] combined with bitters and chalybeates, and aided by a [illegible] rather abstemious diet. The irritative state of the [illegible] (marked by the presence of pyrexia, and tenderness of the spleen on pressure) must previously be subdued by ten leeches to the side (or occasionally a small bleeding at the arm), and two or three doses of jalap and cream of tartar.

The following form of purgative is recommended by Mr. Twining for the congested spleen :—

℞ Pulveris jalapii,
——— rhei,
——— calumbæ,
——— zingiberis,
Potassæ supertartratis, *sing.* ʒj.
Ferri sulphatis, gr. x.
Aquæ menthæ piperitæ, ℥ixss.
Tincturæ sennæ, ℥ss. Misce.
Sumat cochl. ij majora mane et meridie.

When the skin is dry, with much debility, the following pill may be taken with each dose of the mixture :—

℞ Camphoræ,
Pulv. ipecacuanhæ, *sing.* gr. j.
Extr. coloc. compos. gr. iij. Misce.

3. *Hypertrophy of the spleen.*—This disease is sometimes met with in this country in early life, but being chiefly the result of repeated attacks of intermittent and remittent fever, is observed for the most part in adult life and in unhealthy localities. It is frequently accompanied by a cachectic habit of body—a pale and bloodless visage, white lips, and extreme debility, without corresponding emaciation. Persons who to all appearance are capable of ordinary exertion are, in the state of splenic cachexia, scarcely able to crawl. Hæmorrhages often occur from the nose, stomach, or bowels. Dropsy frequently supervenes. Bad ulcers of the legs are mentioned by many old authors as often attendant upon chronic disease of the spleen. It is sometimes associated with disease of the liver, constituting one of the most untractable forms of abdominal disorder.

The remedy largely employed in India for the cure of chronic tumor of the spleen is a compound of garlic, aloes, and sulphate of iron. When emaciation and diarrhœa are present, the garlic and aloes are macerated in brandy; under other circumstances, in vinegar. The proportion of aloes is so regulated as to produce three evacuations daily. The medicine produces also copious secretions from the kidney. The compound decoction of aloes, with the tincture or vinegar of squills, would probably prove equally effectual.

The local treatment consists in the application of blisters, of the actual cautery, the moxa, and, lastly, acupuncturation. The actual cautery was recommended by the Arabian physicians for the cure of this disease. Cases are recorded of its successful employment in India. Issues are not advisable in tropical countries, from their tendency to degenerate into sloughing sores, especially during the rainy season.

4. *Softening of the spleen with hæmorrhage.*—In unhealthy countries liable to endemic fever, the spleen sometimes softens, even independent of fever. Its texture then gives way under the finger, like a loose coagulum of blood. Under these circumstances, the peritonæal coat of the spleen is very easily ruptured by a blow or fall, and a fatal hæmorrhage ensues. Dr. Baillie* describes the softening of the spleen as observed in this country, and remarks concerning it, that it is very rare at an early period of life, but very common in middle and more

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* Morbid Anatomy, p. 231. Wardrop's edition.

advanced age; that it is not characterized by any peculiar symptoms, and is probably of little consequence in the animal œconomy. Still, he adds, it is not a state into which the spleen would naturally degenerate in the gradual decay of the frame.

CHAP. IV.

DIARRHŒA AND CHOLERA.

Diagnosis of the several kinds of Disease attended with Purging. Causes of Diarrhœa. Ingesta. State of the Atmosphere. Diarrhœa from internal Causes. Prognosis. Treatment. Of the Sporadic Cholera. Its Character and Treatment. Of the Malignant Cholera. Its first appearance in Asia, and advance to Europe. Symptoms. Modes of Death in Cholera. Secondary Fever. Prognosis. Diagnosis. Morbid Anatomy. Pathology of malignant Cholera. Question of contagious origin. Treatment.

We are now to enter on the consideration of that important class of disorders which are known to the world under the familiar denomination of *bowel complaints*. The distress which they occasion is far greater than what attaches to diseases of more real danger; and from a general belief prevailing that their treatment is very simple—at least, that the influence of medicine upon them is great, the patient is dissatisfied unless he experiences speedy and effectual relief. To meet this (not ill-founded) expectation, the practitioner must be aware of the several kinds and causes of bowel complaints, and have rendered himself familiar with those minute shades of difference in symptoms, on which the successful administration of remedies so essentially depends. By nosologists they are distinguished by the names of diarrhœa, cholera, colica, and ileus.

Opposed as these diseases *apparently* are to each other in the prominent symptom, the state of the alvine evacuation, the student must yet be apprized of their intimate pathological affinity, and of the necessity of considering them, not only in their relation to each other, but as connected with dyspepsia, and with every variety of abdominal inflammation. I am fully sensible, indeed, that such enlarged views of disease are scarcely reconcilable with the simplicity required in *elementary* instruction; but it will be necessary to keep them in mind from the moment the student enters on the practice of his profession, and gradually to allow the artificial distinctions of diarrhœa, cholera, dysentery, colic, and enteritis, to merge in the wider notion of *disturbed function of the intestinal canal*.

The characters of enteritis and of dysentery have been already discussed (pp. 274, 284, 289). It will be remembered that inflammation of the mucous surface of the intestinal canal is always, and that of the peritonæal covering sometimes, accompanied by a relaxed state of the bowels; while dysentery is uniformly characterized by *purging*, the stools being slimy or bloody, without any admixture of natural fæces. Purging is a symptom of disease greatly diversified in its degree, causes, concomitant symptoms, and the appearance of the matter evacuated. When it occurs without fever, and when the evacuations consist of a watery secretion from the bowels, more or less mixed with their natural contents, it constitutes an idiopathic complaint, and is termed diarrhœa. When the upper viscera of the abdomen (the stomach and liver especially) are implicated, and when to purging is added vomiting, with a copious, or perhaps vitiated, secretion of bile, the affection is of a more formidable kind, and, according to the degree of its violence, is called either *bilious diarrhœa*, or cholera. To the highest grade of this disorder, when it becomes complicated with spasms and excessive exhaustion of the whole system, the term *spasmodic cholera* is applied.

Diarrhœa, even in the limited sense in which it is now taken, is yet a disease presenting itself under very different aspects. To decide, therefore, in any particular case, upon its nature, and to direct its treatment with success, it is necessary to investigate accurately its rise and progress, its probable cause, its preceding and concomitant symptoms; but, above all, it is requisite to have clear notions of the pathology of purging.

Causes of Diarrhœa.—The increased irritability in the intestinal canal which leads to purging is commonly (though not necessarily) associated with increased secretion from the vessels which open on its internal surface. Such a state of disordered function in the bowels may be the result of causes acting on them *directly*, or *indirectly* through the medium of the general system. To the first of these heads we refer,—

stimulating matters taken into the stomach, either as food or medicine. To the second,—particular states of the atmosphere, diseases of other parts of the body, and mental emotion.

1. Diarrhœa is, in the first place, a frequent consequence of aliment, either taken in too great quantity, or improper in point of quality. Being imperfectly digested, it is sent in a crude and probably *acrid* state to the intestinal canal, the delicate mucous membrane of which it irritates, and thereby occasions a purging. Diarrhœa arising from this cause is usually accompanied with the common symptoms of *dyspepsia*, and not unfrequently with severe *vomiting*. The appearance of the matter evacuated (half-digested aliment) is often sufficient to characterize this form of the disease, without reference to its immediate exciting cause. It is attended with griping pains of the bowels, but the pains are perfectly relieved by the evacuation. It commences suddenly, and in almost all cases, though it harasses the patient for a time, it carries with it its own cure. This is the *diarrhœa crapulosa* of nosologists. It is unnecessary to add, that the same kind of diarrhœa is frequently induced by design, and that there exists in nature a variety of substances, both vegetable and mineral, which have the property of producing, even in very small quantity, purging. Should the bowels be peculiarly irritable, (or, under common circumstances, when taken in excess,) these drugs produce that species of diarrhœa which has been termed *hypercatharsis*.

2. A most important feature in the pathology of diarrhœa is its connection with particular states of the atmosphere; but the same general principle is applicable to almost every other disease attended with purging. We have already had occasion to notice it when illustrating the dependence of dysentery upon a moist and heated atmosphere. We shall presently see it constituting all that is known of the causes of cholera; and we may now perceive it influencing the phenomena of diarrhœa. This disease chiefly prevails in the autumnal months, and after any very remarkable changes in atmospheric temperature; as for instance, on the breaking up of a long frost. This was strongly exemplified in the general prevalence of diarrhœa in London, in February, 1823, after one of the longest and severest frosts which have occurred in this country for many

years. Such a condition of the atmosphere is sufficient *per se* to produce diarrhœa, without the agency of any direct exciting cause; but it most commonly acts as a predisposing or *accessory* cause, augmenting the irritability of the intestines, and rendering them susceptible of stimuli, which, under other circumstances, would have occasioned no inconvenience. Like cold, atmospheric vicissitudes alter the distribution of the fluids, and determine them in increased quantity upon the mucous membrane of the intestines.

3. Other causes of diarrhœa act through the medium of the general system; sometimes singly, but more commonly in combination with such conditions of the atmosphere. Of them the most important are, mental emotion (especially the anxiety of mind arising from the embarrassments of business), excessive fatigue, late hours, and irregular habits. Lastly, diarrhœa occurs *symptomatic* of certain diseases in other parts of the body with which the intestines *sympathize*. This is strikingly displayed in the diarrhœa which attends the process of dentition, ulcerated lungs, suppressed cutaneous eruptions, and chronic diseases of the liver.

Prognosis.—Diarrhœa connected in this or any of the preceding modes with general disturbance in the *whole* system, is often a severe and very troublesome complaint, frequently recurring after it appears to be effectually suppressed, and giving rise, by its long continuance, to loss of appetite, languor, lassitude, great debility, and emaciation. The weakness induced by a severe purging that lasts only twenty-four hours is often extreme; and, while it shows us the necessity of giving opiates and astringents in this disease, should teach us also the value as well as the danger of purgatives in others. Diarrhœa is not, however, a disease of danger, except in the case of children and of old persons. The exhaustion produced by it in children has often occasioned a fit of convulsion which proves fatal. Dr. Baillie has described* a particular species of *chronic* diarrhœa occasionally met with in elderly persons, and in those who have lived in warm climates, and suffered from diseases of the liver. It consists in a copious evacuation of a matter resembling a mixture of lime and water (sometimes of the consistence of pudding), and very frothy on the surface. It occasions great debility, is very liable to recurrence when the mind is harassed, is little under the control of medicine, and ultimately wears out the constitution. Persons have lingered under it, however, for several years. The nature of this peculiar variety of diarrhœa does not appear to be accurately known.

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* Transactions of the London College of Physicians, vol. v. p. 166.

Treatment.—The treatment of diarrhœa must be regulated by a consideration of its cause, of the age, constitution, and previous state of health of the patient, the concomitant symptoms, the manner of invasion, its duration, and effects upon the general habit. Much importance has always, and justly, been attached, both by nosologists and practical physicians, to peculiar appearances of the evacuations. They will always afford instruction in reference to the severity of the disease, and the progress made towards a cure, and in some cases they aid the practitioner in the selection of an appropriate aperient.

1. Diarrhœa in young persons of robust habit may very often be permitted safely and with propriety to wear itself out. It should be remembered, however, that where the disease is sufficiently active to effect its own cure, it will do so *speedily*. The continuance of the complaint for more than twenty-four hours must have some latent cause, which it is necessary to detect, and to obviate by medicines.

2. Diarrhœa, from whatever cause it may arise, leaves the bowels morbidly *irritable;* and this it is proper to check by the combination of a demulcent, an absorbent, and an anodyne. In severe cases it is necessary to repeat a draught of this kind after every loose motion. The following formulæ are those in most common use:—

℞ Mistura cretæ, ℥j.
Confect. aromaticæ, ℈j.
Tinct. cinnamomi, ʒj.
Tincturæ opii, ♏v.
Sumat haustum post singulas dejectiones liquidas.

℞ Pulv. cretæ compositi, ℈j.
Aquæ cinnamomi, ʒix.
Syrupi papaveris, ʒj. Misce.
Fiat haustus, sextis horis repetendus.

3. The diarrhœa of children being often connected with imperfect digestion and the formation of *acid* in the stomach, it is right in such cases to begin by exhibiting a gentle emetic of ipecacuanha; and subsequently, small doses of chalk mixture,

with syrup of poppies, or of the hydr. cum creta with Dover's powder. This plan of treatment is applicable also in many instances to the diarrhœa of adults.

4. Where the disease continues long, with griping pains and much *tenesmus*, it is presumable that there are acrid fæces pent up in some portion of the canal, which the natural action of the bowels is unable to dislodge; and here a purgative medicine is indispensable. Half an ounce of the tincture of rhubarb is a popular and useful remedy. Thirty grains of powdered rhubarb in an ounce of peppermint water, or three grains of calomel with a scruple of rhubarb, may then be given, so as to ensure a free discharge from the bowels. I have seen the same treatment required, where the disease, in the first instance, was too speedily checked. Under other circumstances, purgatives are either unnecessary, or absolutely hurtful.

5. When diarrhœa can be distinctly traced to arise from cold, when it occurs in variable states of the weather, or when it is complicated with restlessness, a white tongue, or other marks of general fever, it will be right to commence the treatment by the combination of some diaphoretic, antimony or ipecacuan, with calomel. The following formulæ may be used:—

℞ Pulveris Jacobi, gr. iv.
Hydrarg. submur. gr. iij.
Pil. saponis cum opio, gr. iij. Misce.
Fiant pilulæ duæ.

℞ Hydrargyri submuriatis, gr. iv.
Pulv. ipecacuanhæ comp. gr. viij. Misce.
Fiat pulvis.

This may be followed by a simple demulcent mixture:—

℞ Misturæ amygdalæ, ℥iv.
Tincturæ opii, ♏xx. Misce.
Sumat cochl. ij majora quartis horis.

If, in addition to the diarrhœa, there be any considerable fulness of the pulse with tenderness of the abdomen, the practitioner will bear in mind the possibility of its being connected with an inflammatory condition of the mucous membrane of the bowels; and he will obviate this, as circumstances may require, either by bleeding at the arm, leeches, and fomentations, or the milder discipline of confinement to bed, and the pediluvium. It is unnecessary to add, that here, as in every other form of diarrhœa, the diet should be light and easy of digestion, and may consist of grit gruel, rice pudding, panada, sago, or chicken broth.

6. Lastly, when diarrhœa resists the medicines now recommended, especially when it occurs to elderly persons in that chronic form lately described, more powerful astringents become necessary. Ten grains of the compound powder of kino may be given in cinnamon water, or an ounce of the compound infusion of catechu, three times a day. To the latter a due proportion of laudanum may be added. The confectio opiata is well adapted to cases of this description, as well as to those of hypercatharsis. The sulphate of copper, in doses of three grains twice a day, made into a pill with extract of hyoscyamus, merits a trial. Starch injections, containing laudanum, are sometimes required once, or even twice, during the day.

CHOLERA.

The leading features of cholera, and its pathological relation to diarrhœa, have been already pointed out. From the earliest times, it has been acknowledged as one of the most dangerous diseases to which the human body is subject; but the extreme malignity of which it is susceptible was never thoroughly known until within these few years, when it has been seen to spread with an uncontrollable violence, unequalled, except in the records of the most dreadful plagues. Cholera must be distinguished, as it occurs *sporadically* and *epidemically*.

SPORADIC CHOLERA.

Sporadic or accidental cases of cholera have been observed in all ages, and have been described by all authors on medicine from the days of Hippocrates. The principal symptoms of the disease, as detailed by them, are, incessant vomiting and purging, rapidly exhausting the strength, and producing, first, spasms of the extremities, and ultimately cold extremities, clammy sweats, and a debility always formidable and sometimes irremediable. Sydenham described such a complaint with great accuracy. He noticed its frequency during the autumnal months, and its probable dependence on some peculiar influence of a heated atmosphere upon the system generally, but more especially upon the functions of the chylopoietic viscera, the stomach, liver, and intestinal canal. A general belief was entertained that the aggravated forms of bilious diarrhœa run into cholera, and that the proximate cause of the disease was an increased secretion of bile, which being of an acrid, or at least highly vitiated quality, stimulated the intestines to that increased action which ended in spasm and debility. This view of the disease was borne out by the usual results of treatment. Diluents and demulcents were given as well to dilute the bile as to sheath the intestines from its acrimony. Opiates were largely employed to lessen irritability, and beef tea and brandy to support the system under the exhausting or colliquative discharges. Such a treatment was found successful in a large proportion of cases, and it was always noticed that in those which terminated favourably the convalescence was singularly rapid. It was generally understood that the exhaustion was like that which follows some accidental hæmorrhage, and was always in the direct ratio of the vomiting and purging.

Such were the characters attributed a few years ago to the autumnal, sporadic, or as it was sometimes called, English cholera. Though it occasionally proved fatal, this event was yet so rare that up to the 21st December, 1830, cholera had never appeared as a specific disorder in the London bills of mortality. We have now to contrast the sporadic with that new form of cholera, which, from its original locality, extraordinary fatality, and mode of propagation, has been called the Asiatic, the malignant, or the epidemic cholera.

MALIGNANT CHOLERA.

Rise and progress.—One of the most curious branches of medical study is that of pathological chronology, or of the first appearance, dissemination, subsidence, and ultimate disappearance of particular diseases. We have had occasion to touch upon this subject on several occasions. We have seen small-pox and measles first showing themselves in the sixth century, scarlet-fever early in the seventeenth, cow-pox late in the eighteenth; syphilis became first known about the year 1494. The malignant cholera dates its origin from the year 1817. It first appeared in the month of August of that year, at Jessore, in the Sunderbunds of Bengal, a town a hundred miles distant from Calcutta. During that and the following year the disease ravaged the peninsula of India. In 1823, it reached the borders of the Caspian sea, and fears were then entertained by some, that it might ultimately reach and devastate Europe. These forebodings were realised in the year 1830, when cholera in the most malignant form suddenly appeared in the south-eastern provinces of the Russian empire, and reached Moscow in the month of September. In June, 1831, Petersburg was attacked by it; in September, Berlin; in October it appeared in Sunderland. In February, 1832, the epidemic cholera broke out in London.

It will be unnecessary to trace the history of the disease further; suffice it to say, that it has since invaded France, Spain, America, Sweden, and Barbary, and that in all probability every portion of the globe will experience in its turn the devastations of this formidable malady.

Symptoms of the malignant cholera.—This disease sometimes commences suddenly, with weakness, trembling, giddiness, and nausea, quickly followed by vomiting and purging. At other times it is preceded, for one, two, or even three days, by diarrhœa. When the malady is fully developed, the following are the most characteristic of its symptoms. 1. The matters rejected both upwards and downwards have the appearance of rice gruel, or of whey mixed with white flocculi. The vomiting and purging are unremitted, being often aggravated by food or medicine, still more by the draughts of cold water, which an intense thirst induces the patient urgently to demand. 2. The whole surface, but particularly the face and extremities, assumes a leaden, blue, or purplish tint. The fingers appear shrunk, damp, and as if long soaken in water. The respiration is hurried and laborious, and the voice indistinct. Blood drawn from the arm appears in drops of a deep black colour. 3. Spasms begin in the fingers and toes, and thence gradually extending to the calves of the legs and forearms, invade in severe cases the trunk of the body, and are aggravated by any, even the slightest, exertions. 4. There is a painful restlessness. The patient tosses about incessantly, from a sense of heat, weight, and anguish about the præcordia. 5. The pulse gradually lessens in force, until it becomes imperceptible at the wrist. The skin is cold. The tongue is cold to the touch, and a thermometer introduced below it indicates a fall of eight or ten degrees below the natural standard. 6. The countenance collapses. The eyes appear fixed and glassy, sunk in their sockets, and surrounded by dark circles. There is extreme prostration of bodily strength. 7. The secretion of urine is almost totally suspended. 8. Delirium is seldom present, and the patient often breathes his last with his senses entire. An indifference to life is frequently observed through the whole course of the disease.

Modes of death in cholera.—The usual mode of death in cholera is by exhaustion and collapse, but in some cases the patient dies in the state of complete apoplexy. Stertorous breathing and insensibility precede, under these circumstances, for several hours, the fatal event. This occurrence we may reasonably attribute to the circulation of imperfectly oxygenated blood through the substance of the brain. The duration of the symptoms is subject to considerable variety. The average duration, in fifty-six fatal cases which fell under my observation in the spring of 1832, was twenty-six hours. The disease has been known to prove fatal, in exhausted habits, within a few hours from the invasion of the urgent symptoms. It seldom lasts longer than three days, unless the symptoms undergo that change which I next proceed to describe.

Secondary fever of cholera.—In some instances the recovery from cholera is both speedy and perfect. A degree of languor only remains, which wine and nourishing diet quickly remove. But in a certain proportion of cases, a reaction takes place at the end of thirty-six or forty-eight hours, amounting to fever. The pulse and heat of skin return. Headache succeeds, with noise of the ears. The urine is passed in small quantity, and high coloured. The bowels throw off a load of vitiated bile, the stools being dark and pitchy; and by degrees the patient recovers. This favourable result is not, however, uniformly observed. Sometimes the symptoms assume a typhoid character, and the patient ultimately sinks with the usual symptoms of cerebral effusion. At other times the secretion of urine is unexpectedly repressed, and death occurs when the practitioner is least prepared for it. In a third set of cases, the gorged state of the lungs and bronchia, which had marked the early periods of the disease, merges in bronchial inflammation, and the patient dies with profuse secretion of pus, or puriform mucus, into the air passages. Lastly, the secondary fever of cholera is sometimes attended with hæmorrhage from the bowels, or profuse bilious vomiting and purging, the violence of the disease falling upon the mucous membrane of the intestinal canal.*

Prognosis.—The mortality of the epidemic cholera approaches very nearly to that of the Egyptian plague. In some epidemic visitations it has been comparatively mild, but it seldom happens that the mortality is less than fifty per cent. It has been known to be as high as sixty, or even seventy per cent. Of the eighty-five cases which fell under my official observation in March, 1832, fifty-six died, being in the ratio of sixty-six per cent. The danger is proportioned rather to the intensity of the thoracic than of the abdominal symptoms. The most unfavourable signs are those which indicate a paralysed condition of the lungs, and feebleness of the heart's action, viz., blueness of the surface, coldness of the tongue and skin, an imperceptible pulse, extreme restlessness, and collapse of the features.

Diagnosis.—The chief circumstances in which the new or epidemic form of cholera differs from the cholera of Sydenham are the following:—1. In the gruel-like appearance of the evacuations. 2. In the predominance at an early stage of the disease of symptoms depending, not on mere debility of the circulating powers, but on mal-oxygenation of the blood. 3. In its occurrence in the winter and spring seasons. The disease raged at Moscow and the neighbouring towns during the depth of winter. 4. In the phenomena of its secondary fever. 5. In its resistance to all ordinary remedies, and extreme malignity. 6. In its mode of propagation.

Morbid anatomy.—One of the most singular occurrences which distinguish the malignant cholera is the continuance of muscular movements of the hands and feet, for a considerable time after the heart has ceased to beat. This phenomenon is, I believe, peculiar to cholera. The usual appearances in dissection, when death has proved fatal during the stage of collapse, are the following:—A pink suffusion of the peritonæal surface of the intestines; the gall bladder distended with dark green or black bile; the bladder of urine strongly contracted; abundance of a white starchy fluid in the alimentary canal resembling the evacuations; the absence of all bilious tinge in the contents of the bowels; the mucous membrane of the intestines studded with tissues of enlarged vessels; the glands of the duodenum and jejunum unusually prominent; the lungs, heart, and large vessels containing a very dark blood.

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* See Laurie on "The Secondary Fever of Cholera," in the London Medical Gazette, vol. x. p. 666.

When the disease proves fatal in the period of secondary fever, other appearances occasionally present themselves, corresponding with the character of the symptoms during life.

Pathology of malignant cholera.—The course and character of the symptoms tend alike to show, that the disease consists in a highly deranged state of the nervous and vascular systems, the blood accumulating about the large and deep seated organs of the body, and not undergoing the necessary changes in the lungs. To distinguish it from the cholera of Sydenham, it has been proposed to name it the cholera *asphyxia*. The rapidity of its course and the uniformity of its symptoms suggest the possibility of its origin from some *poison* received into the system from without; but this can only be regarded as a mere hypothesis, neither admitting of proof nor refutation. Malignant cholera arises, like other epidemic diseases, from causes altogether unknown to us. In every country in which it has gained a footing, it is periodically renewed, and will probably continue to show itself occasionally when the state of the air is favourable to its development and propagation. To attempt to define what that state of atmosphere is, would be a vain and profitless pursuit. The autumn is obviously the season that more especially favours its diffusion, but it should excite no surprise to see the disease raging epidemically hereafter either in a mild spring or an inclement winter.

Propagation by contagion.—Few questions in medicine have been more warmly agitated than the contagiousness of malignant cholera. When the disease first appeared in Europe, a notion prevailed that cholera, like small-pox, depended for its propagation entirely upon personal communication and contagious effluvia. Experience soon demonstrated the incorrectness of this doctrine. Pathologists then ran into the other extreme, and denied to the morbid products of cholera any share in the propagation of the disorder. To this doctrine facts are equally opposed. Having witnessed the nurses in the St. Giles's Cholera Hospital fall successively victims to the disease, I cannot hesitate to admit, that the effluvia arising from the bodies of cholera patients, especially when concentrated, contribute in many cases to the production of the disease.

Where an origin by contagion can be most distinctly ascertained, it appears that the incubative period of the infective germ is very short, never exceeding five days.

Treatment of cholera.—The modes of treatment which have been proposed for the malignant cholera are almost infinite. Persons have recovered under each of them, but their absolute value may be deduced from the single fact that, after being known for a period little short of twenty years, the proportion of deaths per cent. remains the same as when the disease first broke out in Jessore. The complaint is truly malignant, and the very nature of malignancy is resistance to remedial agents.

The ordinary plan of treatment in cholera may be thus briefly sketched:—

During the incubative stage.—The initiatory diarrhœa is to be checked in the usual mode by chalk mixture, aromatics, and astringents.

During the stage of collapse.—When the vomiting has commenced, and the blue colour of the skin denotes the incipient state of asphyxia, an emetic of common salt or of flour of mustard is to be administered. The spasms that succeed are to be relieved, as far as possible, by frictions with camphor liniment and the oil of turpentine. A full dose of calomel (ten grains) may be given early in the disease. The strength of the system may be supported by brandy and water, and cordial draughts containing sal volatile, ether, cajeput oil, or essence of peppermint. Injections of strong broth with laudanum may be thrown up into the rectum, every two or three hours. The warmth of the surface may be kept up by means of hot bottles, or of bags filled with warm bran. The warm bath and vapour baths are not found to answer. Calomel in union with small doses of opium, repeated at short intervals, is very generally resorted to. Opium, given in full doses, in the hope of allaying the vomiting and diarrhœa, is generally acknowledged to be prejudicial. The loss of blood from the arm seems sometimes to relieve the congested state of the lungs; but in all severe cases, the veins yield their blood *guttatim*, without any manifest effect upon the disease. As a last resource, saline injections may be thrown into the veins.

During the secondary fever.—When, by the efforts of nature, aided perhaps by art, the stage of reaction has commenced, the efforts of the physician may be renewed with better prospect of success. Leeches applied to the temples, purgatives given to aid the bowels in throwing off an oppressive load of unhealthy secretions, blisters to relieve the congestion of the lungs, and diuretics to support the drooping action of the kidneys, are the measures of most importance. These, however, will be sufficiently understood by those to whom the management of fever is familiar, and the student is referred for his guidance to the rules already laid down in the early part of the volume.

CHAP. V.

COLIC AND ILEUS.

General character of these diseases. Division of Colic into four species. Effects of Simple Constipation. Common or Accidental Colic. Bilious Colic. Symptoms and progress of this disease. Its Pathological relations. Mode of its treatment. Colica Pictonum. Its symptoms and method of cure. Of Ileus. Its causes and usual termination.

There is but little in the history of these affections which is interesting to the pathologist. A few observations, therefore, on their general character, causes, and methods of treatment, will include all that seems essential to be known regarding them.

Colic and ileus are to be considered as *gradations* of the same state of disease; *viz.* of a spasmodic constriction of some portion of the intestinal canal. They are equally characterized by griping pains and distension of the lower bowels, a sense of twisting or wringing round the navel, and spasmodic contractions of the abdominal muscles, with *costiveness*. When these symptoms continue obstinate, and when there is added to them *vomiting*, particularly of matters having the appearance or odour of fæces, the disease is in its highest degree, and is called *ileus*, or the iliac passion.

Nosologists have been at great pains to describe different *varieties* of colic, but they have extended them beyond all reasonable bounds. It will be found in practice, that colic admits of a fourfold division, according to the nature of the remote cause. The first is the *accidental* colic, arising from some acrid ingesta, which irritate the bowels without producing diarrhœa. The second is the *bilious* colic, a form of disease closely allied to bilious diarrhœa and cholera, occurring along with them, principally in the autumnal months, and apparently differing from them only in some unessential features. The third is the colica *pictonum*, the well-known painter's colic, arising from the poison of lead. The fourth is *ileus*, from disorganization of the abdominal viscera, or some mechanical impediment to the due exercise of their functions.

CONSTIPATION.

Before entering on the consideration of colic, a few lines may be devoted to a notice of simple costiveness. The symptoms which it occasions vary greatly in their character. In most cases it produces headache and giddiness. Some times we observe *thoracic* symptoms emanating from such a source, such as tightness across the chest, difficulty of breathing, and a hard, dry cough. These effects of constipation are probably referrible to distension of the great arch of the colon, and consequent impediment to the free motions of the diaphragm. At other times the mucous membrane of the colon and rectum chiefly suffer, and the result is piles. Occasionally the stomach is affected, when dyspepsia follows. To constitute a fit of the colic, something must be superadded to the state of costiveness. What that is, we next proceed to investigate.

I. COMMON OR ACCIDENTAL COLIC.

This disorder is frequently occasioned by cold, atmospheric vicissitudes, change of clothing, or improper articles of diet, such as acescent wines. It is usually attended with some symptoms of indigestion, and is hence called the *flatulent colic*, or windy spasms. The pain of which the patient complains is often very acute, but seldom permanent, and is in almost all cases *relieved* to a certain degree by pressure. These circumstances, joined to the natural state of the pulse, and the absence of all febrile heat of skin, constitute for the most part an obvious diagnosis between colic and *enteritis*, the only disease with which it is likely to be confounded. The student, however, will bear in mind, that the causes of colic prove also in some cases those of abdominal inflammation, and he will be prepared to find the one merging occasionally in the other. He will not hesitate, therefore, to take away blood, if the severity of the attack, or the habit of the patient, lead to the probability of inflammatory action.

Under common circumstances, the treatment of this variety of colic is sufficiently simple. In many cases the spasm is relieved by a glass of warm brandy and water. A tablespoonful of the tincture of rhubarb in a glass of peppermint water is a familiar and useful remedy. Where these fail of the desired effect, an aperient draught, containing rhubarb and the aromatic confection, may with propriety be given. In severe cases it becomes necessary to exhibit active purgative medicines (especially jalap and senna) in full doses, and to promote their operation by enemata, composed of the sulphate of soda and castor oil in thin gruel. This species of colic is frequently observed in women of an *hysterical* habit, and the term *hysteric* colic has often, but unnecessarily, been applied to it.

II. BILIOUS COLIC.

This is one of the common autumnal epidemics of this country, and will generally be found to prevail after a long continuance of a hot and moist state of the air. It occurs at the same time with diarrhœa, cholera, and jaundice, and may fairly be imputed to an increased and vitiated secretion of bile. It would appear as if the bile under such circumstances wants that cathartic quality which it commonly possesses, and acquires some preternatural acrimony, which, irritating the intestinal canal, throws it into spasmodic contractions. Acrid bile, pent up in the intestines, becomes literally a *poison* to the system, and is the occasion of many very anomalous symptoms. An attack of this kind is usually called a *fit of the bile.*

Bilious colic is ushered in with headache, loathing of food, a bitter taste in the mouth, and very often bilious vomiting; but the *urgent* symptoms are distension and griping pains of the bowels, pains of the loins, and obstinate costiveness, or at most *tenesmus*, the motions being very scanty and partly slimy. The continuance of such an irritation even for a short time usually leads to fever; and bilious colic therefore is frequently complicated with the more general affection, ***bilious fever***. In this particular variety of fever there is often considerable headache, for the most part referred to the occiput. The tongue is loaded, the fur upon it being often yellow, and in streaks. There is, besides, much thirst, a short dry cough, restlessness, giddiness, and exceeding languor and lassitude, amounting even to fainting, the pulse being seldom much accelerated, or the heat of skin very apparent. In irritable habits, hysterical symptoms frequently show themselves.

In this state of disease, if a discharge of fæculent bilious matter can be obtained, the symptoms generally yield; but it is often exceedingly difficult to procure evacuations of this character, on account of the irritability of the stomach. Where bilious stools are not brought away, it is common to find chocolate-coloured motions passed, often in vast quantity, reducing the patient to a state of great weakness. If by the fortunate combination of medicines, or by the efforts of nature, the irritating cause is removed, the tongue becomes clean, appetite returns, and the patient recovers strength.

Such is a brief sketch of the bilious colic, as it prevailed in London in 1821. It closely resembled that described under the same name by Sydenham, as occurring in London in 1670-71. The observations formerly made on the causes of bilious diarrhœa apply equally to this case.

In the treatment of bilious colic, the object is to free the bowels from the load which oppresses them; but the practitioner must also keep in view that *irritable* state of the whole tract of the alimentary canal, which is so prominent a feature in the disease. Opium at once suggests itself as a ready means of allaying this morbid irritability of the bowels; but experience will show, that though it affords relief in the first instance, its exhibition is in most cases succeeded by increased feverishness, and an aggravation of headache, and uneasiness of the bowels.

Unless full vomiting has already taken place, it will be advisable to begin by giving ten or fifteen grains of ipecacuanha, which may be followed by a pill containing calomel and rhubarb, a dose of castor oil, or the common senna draught. If there be much irritability of stomach, it is better to commence with a saline medicine, in a state of effervescence, containing a few drops of laudanum. This will enable the practitioner to administer his aperient subsequently with more advantage. When the operation of the purgative upon the bowels is manifest by the appearance and odour of the evacuations, a full dose of laudanum may be given with the best effect. For several days afterwards it becomes necessary to exhibit, occasionally, some gentle aperient, which may prevent *accumulation* and reaction. During the convalescence, which is sometimes very tedious, advantage will be derived from a light tonic, such as equal parts of camphor mixture and decoction of bark.

III. COLICA PICTONUM.

There is a species of colic which has been proved by ample evidence to arise from the gradual absorption of lead into the system. Little mention is made of such a disease in the writings of the ancient authors, though many of them were sensible of the generally deleterious effects of lead upon the body. Paulus Ægineta is the first who distinctly describes the disease, without however being aware of its true cause. For many years afterwards it was attributed to *acidity*. It was first called colica pictonum by Francis Citois, in 1617. The discovery of its real source was made by some German physicians in 1696, who in attempting to investigate the origin of an epidemic colic then prevailing, ascertained that vintners had been in the habit of making their wines palatable by throwing *litharge* into the casks. The first author who drew the attention of the profession to the subject in this country was Sir George Baker, who in the most elaborate manner* traced the disease to *lead*, in a variety of situations where it had not previously been suspected.

This complaint has little to distinguish it from the more common varieties of colic. There is the same violent and almost constant pain about the navel, with a retraction of the integuments of the abdomen towards the spine, pain in the small of the back, tenesmus, and sometimes, though not constantly, vomiting. The patient experiences a degree of relief by keeping the trunk bent upon the knees. The constitution suffers but little, even in aggravated cases of this affection. The pulse and tongue are unaffected, and no debility is produced by it. Instances of a fatal termination to colica pictonum, however, are by no means uncommon, and this has occurred even after the bowels have been opened by medicine. On dissection nothing has been observed calculated to throw light on the immediate cause of death.

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* Transactions of the London College of Physicians, vols. i. and ii. 1767. A series of six papers.

Colica pictonum, when once established, is very liable to relapses. In the course of time it assumes a chronic character, and is accompanied with a remarkable palsy and wasting of the muscles of the fore-arm and hand. The joint of the wrist becomes loose and flaccid, and a tumour is often perceivable in the back of the hand. In the worst cases, a more formidable affection of the nervous system is met with, evinced by the occurrence of delirium, convulsive fits of an epileptic character and even confirmed coma. If these complaints concur with such habits of life as expose the patient to the influence of lead, the true nature of the disease is placed beyond the possibility of doubt.

In the treatment of saturnine colic the relief of pain is a matter of the utmost consequence. In the more common varieties of colic, it is often advantageous, though not absolutely necessary, to *allay* the pain in the first instance; but here the spasm is so fixed (apparently in the circular bands of the colon), and the pain so intense, as generally to defeat the operation of a simple purgative. To relieve this pain, blood must often be taken from the arm to the extent of sixteen ounces. The purgative medicine must also be combined with opium. If the stomach be in a state to allow of its administration in a *liquid* form, it should always be preferred. Castor oil, or the common senna draught, with a due proportion of laudanum, may be repeated every four hours until the bowels are freely moved. On the other hand, where the stomach is irritable, attempts should be made to procure stools by pills of colocynth, calomel, and opium; but the practitioner will be careful not to persevere too long in the use of calomel, as the system is very susceptible of the influence of mercury in this, and, I may add, in all other states of spasmodic disease. In severe cases, the croton oil, united to the compound extract of colocynth and opium, will be found very beneficial. Fomentations to the abdomen, the warm bath, and emollient injections containing laudanum, will contribute materially to a speedy and successful result. When the bowels are once freely moved, the pain, which had previously perhaps been excruciating, quickly subsides. A return of the disease, so much to be dreaded, is to be guarded against by the daily use of some aperient medicine, such as the common lenitive electuary (confectio sennæ), in the dose of one or two tea-spoonfuls.

IV. ILEUS.

One of the most distressing states of disease which the physician has ever occasion to witness, is that of ileus; but happily it is very rare. This disease is characterized by obstinate constipation, accompanied by vomiting of matters having a stercoraceous aspect and odour. There is both an acute and a chronic ileus. The former is the most rare. I have seen it prove fatal in four days. Under common circumstances, the course of the disease is much more gradual. It usually begins with the ordinary symptoms of colic, and is, perhaps, in the first instance, relieved by the means previously recommended. Continuing to recur, however, the time at length arrives when purgative medicine ceases to have its effect. Day after day passes without relief to the bowels, which remain painful and *distended*. Vomiting succeeds, and stercoraceous matter is sometimes rejected. The distress of the patient under these circumstances can be equalled only by that of his friends and medical attendants, and his release from suffering is all that can be desired. Life is often protracted, however, in this state of disease to a painful extent, and the mind, in many cases, continues clear up to the last moment. Dr. Baillie has described* the case of a man who had no evacuation from the bowels for nearly fifteen weeks before his death.

Morbid anatomy.—Dissection will generally unfold, in a satisfactory manner, the source of mischief; but there is considerable variety in the circumstances which will occasion this total derangement in the functions of the bowels. In some very rare cases, the canal is rendered impervious by mechanical obstructions, such as intestinal calculi and polypi. More commonly a scirrhous tumour will be found, affecting, probably, some portion of the structure of the [illegible] [illegible] [illegible] alteration of a cancerous character. The structure of the gut. In a great set of cases, intussusception will be observed. This an appearance, indeed, is often met with accidentally in children, where no symptoms of obstruction appeared during life; but at other times, it may be a portion of the gut passes within another that it cannot be disentangled. It is [illegible] a curious circumstance, that this state of disease has, in one or two cases, been removed by the efforts of nature, adhesions being formed, the intussuscepted portion of intestine sloughing off, and being afterwards passed by stool. A distinction has been made between progressive and retrograde intussusception, but for obvious reasons it can never be applied in practice. It is worthy of notice, that occasionally, after death by ileus, the intestines have been found, not contracted, but inordinately distended. It has hence been conjectured, and with great appearance of reason, that their muscular fibres may, by the over-distension either of faeces or of flatus, become paralysed, as often happens to those of the bladder of urine from a similar cause. The last source of ileus meriting particular mention is chronic inflammation and general thickening of the peritoneal coat of the intestines. This I have seen in two cases to produce all the symptoms of ileus, without any constriction of the intestinal canal in a particular part.

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* Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. ii. page 174.

Prognosis.—Recoveries from ileus are very rare. It arises, as we have seen, in most instances, from local causes, obviously unsusceptible of relief; but in those cases where it depends upon more general disturbance in the intestinal functions, the disease, before it assumes a decided character, has probably attained a height which will baffle all the resources of medical art.

Treatment.—Where the affection depends on overdistension and consequent *atony* of the muscular fibres, stimulants, such as brandy, afford the best chance of relief. The other remedies which have been resorted to with the view of overcoming the obstruction, after the failure of purgatives, are, dashing cold water upon the extremities, injections of tobacco-smoke, or of tepid water in large quantity, and the internal exhibition of crude quicksilver. It is hardly to be expected, that a disease which in its early stages has resisted a *well-directed* course of medicines, should yield in its latter periods to such bold but often unscientific treatment. A case is recorded, in which ileus was relieved by the employment of an exhausting syringe introduced into the rectum. This remedy appears to be deserving of further trial.

CHAP. VI.

WORMS.

Notice of the several Varieties of intestinal Worms. The Lumbricus. The Tœnia. Ascarides. Symptoms occasioned by them. State of the System, and of the intestinal Canal, leading to their formation. Theory of the Generation of Worms. General Principles of Treatment. Varieties of anthelmintic Medicines. Mode of their Operation. Of the Dracunculus or Guinea Worm. Its Origin and Pathology.

The presence of worms in the intestinal canal carries with it such decided evidence of the existence of disease, that it has, from the earliest ages, been a constant object of anxiety in the world, and a favourite subject of investigation with medical authors. Hippocrates and Galen have written concerning worms; and in our own times the attention of many distinguished pathologists has been directed to the same inquiry. With all this, it is singular how little is really known concerning them, which may illustrate their origin, or direct us in our methods of treatment. It is true, indeed, that their varieties, and everything relating to their *natural history*, has been fully and ably detailed; but to the practitioner in physic these are mere objects of *curiosity*, which may claim attention in an hour of leisure, but are wholly useless as applied to practice. That which to him would be desirable—a knowledge of the general pathology of worms, of the state of body in which they originate, of the symptoms which they *immediately* excite, and of the extent to which they influence the production, or modify the symptoms and progress, of other diseases,—is, it must be confessed, still involved in very great obscurity. Yet these are points which will be found in practice of essential importance, and the investigation of which appears to require only patient attention. I cannot doubt that the subject will one day receive that full investigation which it merits.

The intestinal canal in man is infested by five different kinds of worms; *viz.* the ascaris lumbricoides or lumbricus teres, the ascaris vermicularis or common ascaris, the trichuris, and two varieties of tænia. Of these the trichuris and the tænia *lata* are so rare as not to require a detailed notice in an elementary work. Our attention may be confined, therefore, to the three varieties well known under the familiar appellation of the round worm, the tape worm, and the thread worm. In treating of them, I shall briefly allude to such circumstances only in their history as appear susceptible of practical application.

1. The *lumbricus teres*, or round worm, resembles in its general aspect the common earth worm; but there are many points of difference between them, as well in their external appearance as in their internal structure.* It is from twelve to fifteen inches long, and infests principally the jejunum and ileum. It sometimes ascends to the stomach, and has even been taken out of the mouth. A few instances occur of its being *solitary*. In the generality of cases, however, there are at least two; and occasionally thirty or forty have been found together. They are much more common in the intestines of children than in those of persons full-grown, or advanced in life. In fact, they are rarely met with after fifteen years of age.

2. The *tænia*, or *tape worm*, is frequent in this country, both among children and adults. This worm is often very long, extending in many cases to twenty or thirty feet. It occupies the upper part of the intestines, and feeds on the chyle. It is commonly imagined to be solitary, and has from this circumstance been called the tænia *solium*. This is not, however, strictly the case. The detached joints of this worm have the appearance of gourd-seeds, and it has hence received the name of the vermes *cucurbitinus*. It has been supposed, that each joint possesses a kind of independent life; but this notion is altogether unwarranted.

3. *Ascarides*, or *thread worms*, are about half an inch in

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* The reader will find these fully detailed in Dr. Baillie's Morbid Anatomy, p. 194. For the anatomy of intestinal worms, see also Dr. Hooper's paper, in the Memoirs of the London Medical Society, vol. v.

length, of a yellowish white colour, and remarkable for their very quick motion. Their true domicile is the mucus and thin fæces of the rectum and colon. From this they sometimes wander, and are found in the vagina and about the thighs. Mucus is probably the food by which they are nourished.

Symptoms.—The symptoms occasioned by worms are often very indistinct. They may be characterized generally as those of dyspepsia, irregular action of the bowels, and nervous irritation. A sense of tightness across the epigastrium, with inability to swallow, although the appetite was good, were the chief symptoms of tape worm in a very severe case occurring in adult life, which formerly fell under my care. I am not aware that it is possible to distinguish between the symptoms occasioned by the round and tape worm. It can only be stated generally, that the former produces symptoms of greater intensity, and being so much more generally found in children than the tænia, may commonly be suspected at an early period of life. In adults, on the other hand, affected by symptoms of worms, the presence of tænia is rendered probable.

Children who are troubled with worms complain of a gnawing uneasy feeling about the stomach, which is removed or diminished, by eating. The appetite is deranged and variable, often more than ordinarily voracious. The belly is hard and swelled. There is picking of the nose, hiccup, disturbed sleep, and grinding of the teeth. The countenance acquires a peculiar character (smooth and livid), not easily described, but well known to those who have the care of children. Irregularity of the pulse, a slow remitting fever, and emaciation, are also observable in some cases. The irritation which worms occasion in the delicate constitutions of children has frequently brought on symptoms marking an affection of the brain and nervous system, such as giddiness, dilated pupil, and epileptic fits.

Nothing perhaps more strikingly characterizes the presence of worms than certain *anomalous* symptoms, not observed in other diseases, or not accompanied by those which under common circumstances would appear along with them. A short dry *sympathetic* cough, or pains in the thorax without corresponding dyspnœa or affection of the pulse, are among the most unequivocal symptoms of worms which I have ever witnessed. In like manner I have seen worms occasion every symptom of peritonæal inflammation, with the exception of buffy blood.

The difficulty of making an accurate diagnosis between the symptomatic *nervous* affections brought on by worms, and genuine hydrocephalus, has long been acknowledged. In many cases, I presume it to be quite impossible; the two diseases existing together, and probably standing in the relation of cause and effect to each other. Worms will not only *produce* other diseases, but they will serve to modify the symptoms of such as may accidentally arise. This I have frequently noticed in the case of hooping-cough. It appears, therefore, difficult to assign any limits to the degree of constitutional disturbance which worms may occasion.

There can be no doubt that worms frequently exist in the intestines of adults (and even sometimes of children) for a very long time without giving rise to the least uneasiness. In this way only can we account for the extraordinary length which the tape worm has frequently attained. In many cases the first notice of the complaint which the patient has, is the passing of some portions of the worm by stool. I have seen a person from whom they dropped on any exertion of walking. In other instances, adults having worms suffer some of the inconveniences usually attendant on dyspepsia or colic. It is not often that the nervous system sympathizes at an advanced period of life.

Ascarides seldom occasion any thing more than local uneasiness,—a constant, often intolerable itching about the anus and pudenda, with a sense of heat in the parts, tenesmus, and slimy stools. These uneasy sensations almost always come on towards evening, and prevent sleep for several hours. Although ascarides do not produce much constitutional disturbance, yet they have been known to give rise to itching of the nose, restlessness, headache, giddiness, and some symptoms of dyspepsia. They are easily got rid of for the time by some bitter or oily injection.

Pathology.—I have already had occasion to remark, how little is known regarding the state of the general system, and of the intestinal canal in particular, which leads to the formation of worms, or encourages their lodgment. They are commonly met with in persons of weak, enfeebled, or irritable habits; and therefore prevail much more extensively in children than in adults, in women than in men. Yet many persons in the prime of life are subject to worms, who have no obvious marks of general weakness about them. Further, it cannot be doubted that a weak state of the digestive organs is that which principally leads to the production of worms; and this, as we shall presently see, is an object of the first importance with a view to treatment. The disposition to form worms, when once begun, is with difficulty removed. In some habits it appears to be almost unconquerable, and this I have observed to apply more particularly to the case of tænia.

There is nothing in all pathology more obscure than the *origin* of intestinal worms. The theory which ascribes them to ovula which are taken into the body along with the food and drink, and find a nidus in the mucus and imperfectly assimilated food of a weakened intestine, might be supported if we found such animals in other situations. But this is not the case: they are incapable of existence for any length of time, except within a living animal body. Another supposition has therefore been started, that they are formed independent of ova, from matter contained in the intestines, having previously no regular organization. This idea, however, is contrary to all analogy in the production of animals, where any satisfactory opportunity of investigating the subject exists. The origin of intestinal worms, therefore, is still involved in great difficulties, and probably will not soon have any satisfactory light thrown upon it.

Treatment.—The treatment in worm cases has usually been conducted upon very empirical principles. The only object sought has been the expulsion of the worms, and this has in many instances been effected by medicines which have a tendency at the same time to weaken the action of the stomach and intestines, and thus to increase the disposition to form them.

It would be tedious and useless to enumerate all the *anthelmintic* remedies which have been recommended even upon high authority. Some of them are simply drastic cathartics; such as colocynth, scammony, gamboge, calomel, and jalap. These medicines, in spite of their debilitating effects, are certainly of great importance, and it will be right in all cases to commence the treatment with some mixed purgative powder. That which operates briskly, and which brings away most mucus, will answer the best. The legitimate reason, indeed, for exhibiting active purges, is to free the intestinal canal from that load of mucus in which the worms burrow, which is thrown out perhaps, in some measure, as a defence against them, but which in its turn interferes seriously with the process of digestion, and prevents the due action of tonic remedies.

The second class of anthelmintic medicines includes the oils, fixed and volatile, especially castor oil and oil of turpentine. They have been supposed to operate by blocking up the respiratory pores of the worms; but this theory can hardly be supported. The oil of turpentine, first recommended by Dr. Fenwick, of Durham, in 1810,* is undoubtedly the most certain of all the means we possess of directly removing worms. The full dose (in which it may *safely* be given even to children) is six drachms, in milk, or mixed with water either by means of mucilage or honey. It generally produces an intoxicating effect that quickly passes off. The tænia seldom or never resists it. The student will remember that this is of all worms the most difficult to remove. The round worm, on the other hand, possesses great sensibility, and is very easily got rid of; and hence it is that such a variety of medicines have been found useful in its cure.

The third class of vermifuge medicines includes those which are bitter, acrid, or astringent, and which may be imagined to act either by a direct effect upon the worm, or more probably by virtue of some tonic property. Of this kind are the artemisia santonicum or worm-seed, the male fern root, the spigelia marylandica, and geoffræa inermis.

Lastly, there are certain anthelmintics admitted into common practice, whose operation it would be difficult to explain on any ascertained principle; such as the dolichos pruriens, tin powder, strong brine, and assafœtida. The practitioner will cautiously refrain from exhibiting the *filings* of tin, which have been known to prove highly irritating and deleterious. Even the tin powder is a medicine of questionable safety. Some powerful drugs have been recommended with the view of *poisoning* the worm, such as tobacco, arsenic, and hellebore. The remedy, however, is here worse than the disease.

Too much stress has undoubtedly been laid on the administration of these *direct* vermifuges. Practitioners seem to have lost sight of those greater principles which should regulate their treatment, and which are fairly deducible from the views already taken of the *habit* of body in which worms appear.

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* Medico-Chirurgical Trans., vol. ii. p. 25.

The principal object should be to strengthen the system generally, and the digestive organs in particular; and to excite that energy in the constitution which may enable the intestines to expel the worms, and to *resist* their subsequent formation.

The means by which these ends are to be obtained are the same which apply in ordinary cases of dyspepsia. The diet of the patient is carefully to be regulated. Digestion is to be promoted in languid habits, by the use of bitters and stimulants. A regular action of the bowels is to be kept up, and accumulation prevented, by small doses of rhubarb in combination with the extract of chamomile. The general system is to be strengthened by daily exercise in the open air, by the cold bath when the season permits, and partly too by the use of some preparation of steel.

DRACUNCULUS, OR GUINEA WORM.

Of the several parasitic animals which infest the human body, one of the most singular is that which occurs in hot countries, especially in western Africa, Grenada, and several districts in the East Indies, and is described by authors under the name of Guinea-worm, Filaria medinensis, Gordius lacteus, Dracontia, or Dracunculus. It is a white transparent worm, burrowing under the cuticle, and, when full grown, measuring from three to twelve feet in length. One end is sharp and pointed; the other terminates in a small hook. It may be felt under the skin, and traced by the fingers, like a waved piece of whipcord. In many cases its existence is not discovered until it has occasioned an inflammation of the skin, of the nature of a common boil. This is often preceded by an itching in the part, followed by a blister. If no interference takes place, the inflammation increases, a small abscess forms, and the worm is ultimately expelled. More usually, an incision is made in the skin, and the body of the worm gradually drawn out, and wound round a piece of cotton. This process often requires several days, or even weeks. The experience of the native practitioners of India enables them sometimes to extract the worm at a single operation. Great art is required not to strain the delicate structure of the worm too much, in the process of extraction. If the animal be broken, the succeeding inflammation is often very troublesome and tedious.

The origin and pathology of this disease is very little known.

It is endemic in certain localities, and no where more remarkably than at Matunga, near Bombay. The inhabitants there uniformly ascribe the disease to the use of tank-water. Dr. Smyttan[*] believes that the disease is produced by ova conveyed in the water. He has found worms of the same character attached to the liver and kidney, and has ascertained that they possess considerable migratory motion. Other pathologists imagine that the ova gain access to the body by means of the pores of the skin. The disease is purely local. No constitutional symptoms attend it under common circumstances.

The latest author on dracunculus is Dr. Morehead,[†] who, to many curious observations on the intimate structure of the worm and its treatment by extraction, adds some hints on the origin of the disease. He notices its remarkable prevalence during the months of May, June, and July, and considers that the pathology of dracunculus is still very imperfect, but capable, if properly investigated, of affording much interesting and even useful information.

CHAP. VII.

INFANTILE FEVER AND MARASMUS.

Diversity of Views which have been taken of Infantile Hectic. General Character of the Symptoms. Prognosis. Circumstances under which it occurs. Exciting Causes. Influence of deranged Stomach and Bowels. Predisposing Causes. Appearances on Dissection. Principles of Treatment in Infantile Fever and Marasmus.

In all systems of nosology, *atrophy*, or emaciation, has been considered as a disease comprehending under it a great variety of species. In practice, however, it can never be viewed but as a *symptom* referrible to some ulterior cause, and never of itself leading immediately to treatment. Of all the species of atrophy which have been described, there is none so common, or so uniform in its accompanying symptoms, as that which occurs in early life. The general wasting of the body is then attended with fever of a slow remitting kind, which being an equally prominent feature of the complaint, has in many cases given a name to it. The student will accordingly find the disease described in different works, under a variety of scientific names, according to the views which have been taken of it: — infantile hectic, infantile remitting fever, worm fever, atrophia infantilis, tabes mesenterica, mesenteric fever, diseased mesenteric glands, marasmus. It is certainly a curious circumstance, considering the frequency of this complaint and the period of life at which it prevails, that no *familiar* denomination should ever have been found for it in the language of the nursery. All authors have agreed in acknowledging its close connection with a disordered condition of the abdominal viscera, either structural or functional; and as it is strictly a *chronic* disease, we may take this opportunity of entering on its investigation. The title which I have preferred is that which is now commonly adopted in this country. In its early stages, while fever gives the disease its character, it is natural also that it should give it its name. At a more advanced period, particularly when *structural* derangement of the abdominal viscera has supervened, it is usual to call it marasmus; but the denomination is of course of trifling importance, if the true nature and causes of the disease are well understood.

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[*] Transactions of the Medical and Physical Society of Calcutta.

[†] Ibid. vol. vi. p. 418.

Symptoms.—The following may be taken as a general outline of the symptoms of this complaint. In one case I saw the disease ushered in by an attack of *acute* peritonæal inflammation. Such a circumstance is rarely met with. In general it makes its advances very gradually, manifesting itself by irregularity in the bowels, and slight daily accessions of fever, during which the patient is drowsy. The appetite is variable, the tongue often unaffected, but the pulse is preternaturally quick. In the intervals of the febrile paroxysms the child appears perfectly well. After a time, varying from one to three, or even four weeks, fever of a more violent kind displays itself, lasting perhaps for several days, during which the cheeks are flushed, the skin is exceedingly hot and dry, and the pulse a hundred and forty in the minute. There is also very often delirium.

Digestion appears now to be perfectly at a stand. The food passes off without undergoing any change but what results from its exposure to heat and moisture. The evacuations are altogether devoid of their natural smell and appearance. They are green, slimy, curdled, white, sour, or offensive, according to circumstances. The appetite is so totally destroyed, that for many days toast and water, or the juice of an orange, constitute the whole nourishment. It is not to be wondered at, that under such circumstances emaciation should take place, and even advance rapidly. The child loses all spirits and strength, and refuses to be moved from the bed. There is a very striking symptom of the complaint too, which all authors have noticed,—an incessant picking of the skin of the lips and face, and fingers, apparently connected with their dry and rough state. This symptom is truly pathognomonic of infantile fever.

The presence of so much disease, if unchecked, still more if aggravated by improper management, brings in its train consequences of even a more formidable character. In some cases the brain and nervous system particularly suffer, and there come on symptoms so closely resembling those of genuine hydrocephalus, that it would be a waste of time to attempt a diagnosis between them.

At other times the brain is unaffected, and the violence of the disease falls upon the abdominal viscera. There is pain in the bowels, more or less constant, often very acute, and causing the child to keep his legs continually drawn up towards the belly. The lips are of a deep red colour, the angles of the mouth beset with small ulcers, or the whole lip divided by fissures. The bowels are variable, though commonly relaxed. The abdomen gradually enlarges, and feels full and tense, while the other parts of the body waste. Emaciation indeed goes on in this state of the disease very rapidly and extensively, and gives a well-marked character to it. The cheeks fall in, and, unless flushed with fever, are of a marbly whiteness. The nose appears lengthened, the eye glassy and sunk in its socket. The same whiteness is observable over the whole frame, and the superficial veins are therefore more than commonly distinct.

Lastly, it is not uncommon to find the thoracic viscera implicated, either with or without the mesenteric obstruction now described. The child is said to *catch a fresh cold* Cough comes on, with some shortness of breath and expectoration of puriform mucus, and ultimately the child becomes decidedl
sumptive.

Prognosis.—Infantile hectic proves in many cases very obstinate, and in no small proportion fatal. The chance of recovery varies with many circumstances which hardly admit of precise detail; such as the natural strength of constitution, the time which the disease has lasted, and the attentions of those about the patient. Infantile fever has no determinate crisis. The period of greatest danger, however, is from the twenty-first to the twenty-eighth day. In constitutions originally feeble, little can be done for the relief of the disease. Commencing gradually, and without any adequate exciting cause, infantile fever in such habits often lights up disease in different parts. When it has thus involved the whole system, even the most unremitting attention is insufficient to ensure the safety of the child. It frequently subsides for a time, and then recurs with increased violence, not merely from irregularities in diet, but at a moment perhaps when the greatest attention is paid to diet and regimen.

Pathology.—It is an object of importance to determine under what circumstances this peculiar combination of symptoms occurs, for by this we shall be led to form a just estimate of the causes and general pathology of the affection. It *never* occurs to children at the breast, where the mother is healthy, and the milk abundant; but is often met with, when the milk of the mother is insufficient for the support of the infant. It requires but little acquaintance, however, with infantile remitting fever to know, that it chiefly prevails *after* weaning, and that its principal cause is improper feeding, and consequent bad digestion. From the moment the child is taken from the breast it becomes exposed to it. It may then be supplied with food unfitted for its age, though otherwise wholesome; or with food unwholesome at all ages. Its nourishment may be given too thick or too thin,—too frequently or too rarely,—too much or too little in quantity. It is very difficult for an adult, without long experience, to form an accurate notion of what is fit for the stomach of a *child.* But of this we may be sure, that whatever is given to the child that is not digested, may justly be considered as sowing the seeds of subsequent disease. If not quickly discharged from the body by diarrhœa or vomiting, it injures by slow and often imperceptible degrees the digestive organs, *depraves* the humours, weakens the general habit, develops the scrophulous taint, brings on worms in some cases, and in the end, remitting fever, diseased glands, and a fatal marasmus. A thorough conviction of this should be impressed on all who are entrusted with the management of children.

But while I am thus advocating the extensive influence which derangements of the stomach and bowels have in the production of infantile hectic and its consequences, I am not insensible that other causes are also to be taken into consideration. It appears to me, indeed, that modern pathologists are too exclusive in their opinions concerning the origin of this disease. It cannot, for instance, be overlooked, that it is in the period of dentition, that this disorder, in many instances, first manifests itself. The disturbance which difficult dentition produces in the infant constitution is often extreme; leading to general feverishness, hydrocephalus, convulsions, and peripneumony. Its influence upon the abdominal viscera is equally apparent in the disposition which it gives to diarrhœa. That it may serve as an *accessory* cause to genuine remittent fever, cannot, I should suppose, be doubted. In like manner, it is very common to find the most unequivocal symptoms of *marasmus* supervening on hooping-cough. In some cases I have seen these connected with *worms*, and disappearing when they were expelled; but it cannot thereby be argued that they were owing to the worms. It is more consonant with sound pathology to consider them both as *effects*, depending on general derangement of the digestive organs, and of the whole system, and therefore removed by the same treatment.

Whether the constitutional irritation brought on by hooping-cough and painful dentition be of itself sufficient to induce remittent fever, without the intermediate stage of disturbed digestion, is well worthy of consideration. It probably is so, considering how much in the pathology of this disease depends on the higher degree of irritability in the infant than in the adult frame. The notion of an *idiopathic* hectic was entertained by John Hunter; and, though difficult to reconcile with commonly received opinions, is undoubtedly correct. Fever, having all the characters of the true infantile remittent, has been known to commence as late as the tenth year of life.

In determining the causes of infantile fever, we are not to neglect the strongly predisposing influence of a scrophulous or naturally delicate habit; and indeed much more depends upon this than is generally imagined. How else can we explain the fact, that among so many thousand children who are improperly fed, a small number only are attacked by infantile fever? Such a weakened habit is, in some instances, the consequence of poor diet, bad air, and scanty clothing; but the disease prevails also among children in the first ranks of society. Its first approaches are attributable, in many instances, to the cold of winter; and this consideration may serve, among other arguments, to show that the sources of infantile and of the common varieties of continued fever are more nearly allied than modern pathologists for the most part admit.

Morbid Anatomy.—Infantile remittent fever occasionally proves fatal, without any structural derangement. In such cases the constitution appears to sink under the exhaustion consequent upon long-continued excitement. On dissection, the bowels have sometimes been found greatly distended with air, sometimes more than commonly empty. When the disease is more rapid in its progress, it is not uncommon to find, on examination after death, extensive ulceration of the mucous membrane of the bowels, with or without disease of the mesenteric glands. Sometimes the only morbid appearance has been enlargement and ulceration of the mesenteric glands, of a scrophulous character. This circumstance has induced some pathologists to describe an affection having its *primary* seat in those glands; and Dr. Pemberton * has been at pains to *distinguish* such a disease from infantile remitting fever, though I think unnecessarily. In many cases the lungs are found studded with tubercles, more or less advanced to suppuration.

There exists a primary chronic inflammation of the peritoneum in children, attended with hectic fever and emaciation. The peculiarities of this form of marasmus will be found described in the Medico-Chirurgical Transactions.* It appears to occur only in scrophulous habits, and to have for its diagnostic symptoms excessive tenderness of the abdomen, paroxysms of acute lancinating pain, and after a certain time, the evacuation by stool of very large quantities of a thick white matter, wholly different both from the usual appearance of fæces, and from the slimy stools tinged with bile which accompany the common form of infantile hectic. On dissection the viscera of the abdomen are found united together into one undistinguishable mass. The mucous membrane of the bowels appears ulcerated through, in various places, and communicating freely with the thickened and ulcerated peritoneum. The matter observed within the abdomen corresponds perfectly with that passed during life by stool. The disease appears to be uniformly fatal.

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* Treatise on the Diseases of the Abdominal Viscera, p. 194.

† Volume xi. page 258.

Treatment.—The principles of treatment in infantile remittent fever are now, and have long been well ascertained. To dislodge foul secretions, to establish a good digestion, to allay that morbid irritability which prevails in the whole system, and to resolve mesenteric obstruction, are our primary objects; in accomplishing which we have recourse to aperients, tonics, narcotics, and deobstruents, either separately or combined, according to the state of the patient and stage of the disease. It is easier, however, to lay down indications of cure than to carry our views into practice. The fretfulness of the child, the irritability of the stomach, the perverseness of attendants, unite with the natural obstinacy of the disease in opposing the most serious obstacles to our success. In the treatment of all diseases attention to detail is useful, but in the management of infantile disorders it is indispensable.

Evacuants.—An emetic, composed of six or eight grains of ipecacuanha, will sometimes at the onset of infantile feverishness, evacuate a load of sordes from the stomach with manifest relief to the general system. Purgative medicines are more generally required, and their selection must be regulated by several considerations.

Calomel is often resorted to as a *panacea* in this complaint, and under judicious regulation it is of infinite service, both as aperient and alterative; but if given in too large doses, or too frequently, or when the stomach and whole system are labouring under high irritation, it will only aggravate the evil. It must always be employed with great caution, and its effects carefully watched. Where the disease is recent, and the strength not much impaired, it may be given advantageously in full doses twice in the week, with a due proportion of rhubarb, jalap, or scammony. When very high febrile excitement prevails, it will be advisable to substitute the blue pill with ipecacuanha. A moderate action on the bowels may be kept up in the interval by small doses of rhubarb, given at night, in combination with the sulphate of potash (five grains of each); or a draught containing a like quantity of sal polychrest in the acidulated infusion of roses, may be given twice during the day. The student will bear in mind that active and *frequent* purging is far from being desirable. It tends to weaken the stomach and bowels, and therefore impedes the great object, a return to healthy digestion.

Narcotics and Tonics.—Where much irritability prevails, advantage will be derived from some of the mild narcotics. The following draught may be recommended under such circumstances:—

℞ Extracti conii, gr. iij.
Magnesiæ sulphatis, ℈j.
Aquæ carui, ʒvij.
Syrupi rhœados, ℥j. Misce.
Fiat haustus bis indies sumendus.

When the paroxysms of fever become less severe, it will be right to commence the use of a light tonic, such as the compound infusion of calumba and cascarilla, in which some gentle aperient may, if necessary, be dissolved.

℞ Cascarillæ cort. contusi,
Calumbæ radicis incisæ, *sing.* ℥j.
Aquæ ferventis, ℥vj.
Liquori frigefacto et colato adde
Tincturæ calumbæ, ʒiij.
Spt. amm. aromat. ♏xxx.
Syrupi aurantiorum, ʒiij. Misce.
Sumat cochleare j majus cum semisse bis die.

Where we have reason to believe that the mesenteric glands are becoming affected, half a grain of calomel should be given every night.

It is unnecessary to say, that the most scrupulous attention must be paid to the regulation of diet. It should consist chiefly of farinaceous food, but a small quantity of plain-dressed animal food may be allowed when the age of the patient permits it. Wine is hardly ever required. When the strength of the system has been a little recruited, gentle exercise in the open air will contribute materially to recovery. Change of air is very advisable where it can conveniently be obtained.

CHAP. VIII.

ABDOMINAL HÆMORRHAGE.

Varieties of abdominal Hæmorrhage. Hæmatemesis. Passage of Blood by Stool. Their Causes and Mode of Treatment. Hæmorrhois, or Piles, a functional and structural Disease. Causes of Piles. Symptoms occasioned by them. Treatment. Fissure of the Rectum.

In the present chapter I propose to treat of hæmorrhage as it occurs from the stomach and intestines. The former has been well denominated hæmatemesis. The term hæmorrhoids, or piles, is appropriated to that form of the disease where hæmorrhage takes place from vessels on the verge of the rectum. To the flow of blood from the intestinal canal generally, no appropriate designation has ever been given. The terms *melæna*, and *hepatirrhœa* have occasionally been applied to it; but I would venture to suggest that of *entirrhœa*, as, upon the whole, more advisable. In all cases the blood escapes from the minute vessels ramifying on the mucous surface of the bowels. The peculiar disposition of mucous membranes to the effusion of blood has been already exemplified in the case of epistaxis and hæmoptysis. The principle is equally well illustrated in the phenomena of abdominal hæmorrhage; and it will be a chief object with me to point out, under what circumstances of disease, either in the system generally, or in the abdomen in particular, the mucous expansion of the alimentary canal becomes so disturbed in its function that hæmorrhage takes place from it. An affection of this kind is sometimes primary and idiopathic, arising from accidental causes, such as severe horse-exercise, or a blow on the stomach; but it is chiefly a consequence of different kinds of functional disease in *other* organs, of which the following are the most important.

1. Vomiting and purging of blood occur, in the first place, symptomatic of general febrile disease, of a highly *malignant* or typhoid character. Under such circumstances they are usually associated with petechiæ, and a dissolved and putrid state of the blood; and constitute but a part of the symptoms which mark that very peculiar and formidable state of the ner-

vous and vascular systems, which we have called *acute malignancy*. I have seen them usher in the attack of small-pox, as well as of idiopathic *petechial* fever. It is unnecessary to say, that such symptoms indicate the greatest danger, and are entirely beyond the control of medicine.

2. Hæmorrhage from the stomach and bowels occurs, in the second place, as a consequence of inflammatory action in the mucous expansion of the alimentary canal, and is met with, therefore, as a symptom of abdominal inflammation, of dysentery, and of hectic fever. As such it has already been noticed (pages 257, 284, and 288). On dissection of those who die under such circumstances, the mucous coat of the intestines is found highly vascular, and almost always ulcerated in particular parts.

3. Hæmatemesis, with which entirrhœa frequently concurs, has long been known to be a complaint of young women, chiefly the unmarried, between the ages of fifteen and five-and-twenty, and more especially such as are of full plethoric habit. The matter rejected is seldom pure blood. It rarely coagulates, and should rather be characterized as a morbid secretion of the stomach, *tinged* with blood. This hæmorrhage is seldom attended with danger, and in many instances, even though profuse, is unaccompanied by any signs of debility. It has been observed to last for a great length of time, uninfluenced by medical treatment, and to yield spontaneously. In a large proportion of cases it is unquestionably connected with, and *probably* dependent upon, a deranged state of the uterine functions, more particularly amenorrhœa. In some instances the vomiting even seems to be *vicarious* to the menstrual discharge.

4. Hæmorrhage from the stomach occurs, in the fourth place, along with costiveness, colic, and other marks of simple functional derangement of the *bowels*. In this and the following varieties, the discharge is often pure blood, and is succeeded by faintness, a feeble pulse, and other alarming symptoms. The complaint has not unfrequently been mistaken for hæmoptysis; from which, however, it may always be distinguished by accurate inquiries. It occurs to young females, sometimes with, sometimes without, irregular menstruation, and to elderly persons of both sexes. It is commonly preceded by languor and oppression about the præcordia, cough and dyspnœa, headache, vertigo, and disturbed sleep, a dullness of the eye, and feeble

pulse. Constipated bowels, however, appear to be the *leading* feature of the complaint. The fæces, when brought away, are unnatural in colour, consistence, and smell.

5. Hæmorrhage from the stomach and bowels sometimes proceeds from disease (chiefly organic) of the liver, and is here referrible to the difficulty experienced in the transmission of blood through the vena portæ. There is tenderness of the side or of the belly for some days prior to the rupture of the blood-vessel. These cases of hæmatemesis are often attended with dropsy, and a swelled state of the veins of the abdominal parietes. A profuse discharge of blood is often one of the immediate forerunners of death. In cases of this nature nothing is observed on dissection which can lead to a knowledge of the *immediate* seat of the hæmorrhage. The mucous membrane has been observed softened, as if chemically acted upon.

6. Hæmatemesis and entirrhœa, lastly, are to be traced in a few instances very distinctly to disease of the spleen. This organ may then be felt more or less enlarged; and the discharge of blood from the stomach is complicated with epistaxis, petechiæ, and other marks of irregular action of the vascular system generally. The intimate connection subsisting between the spleen and stomach by means of the *vasa brevia*, will sufficiently explain the manner in which the intestinal hæmorrhage occurs. In this and the preceding varieties of abdominal hæmorrhage the matter discharged has often the appearance and consistence of *pitch;* whence the term *melæna*, or *morbus niger*, was given to it. Such a disease is often to be traced to the excessive use of spirituous liquors, and is then, for the most part, preceded for several days by very acute pain about the præcordia.

Treatment.—The treatment of these different varieties of abdominal hæmorrhage will depend on the nature of the exciting cause, and the habit of the patient. In young women it is often useful to take away blood by the arm, and to repeat this evacuation occasionally, according to the urgency of the symptoms. In almost all cases it is advisable to apply leeches to the epigastrium, hypochondria, or whatever part may be the seat of tenderness, with the view of relieving the engorged state of vessels which precedes and accompanies the discharge of blood. Occasionally it is necessary to repeat the leeches several times before such tenderness is effectually removed. This measure must be considered as of primary importance in the treatment of abdominal hæmorrhage.

Purgatives are adapted to all the forms in which the affection occurs independent of fever; and provided the strength of the patient be not much impaired, full purging may be safely resorted to. Where the liver is diseased, and the constitution seriously weakened, the bowels should be simply unloaded by castor oil, or gentle doses of Epsom salts. In a few cases it may be necessary to employ astringents. The mineral acids, alum, and the combination of kino and opium, are those upon which our chief reliance may be placed. The oil of turpentine, in moderate doses, has sometimes been found of service in checking the disposition to hæmorrhagy, but it cannot generally be relied upon.

HÆMORRHOIS OR PILES.

The hæmorrhoidal flux occupied an important place in all the old systems of physic. It was believed to be a salutary provision of nature, a special effort of the vis naturæ medicatrix, for the advantage of the constitution. The sudden suppression of it, therefore, was highly dreaded. These notions have passed away; and piles are now considered as a painful and disagreeable complaint, arising in most cases from local causes, the cure of which should never be delayed.

Nature of piles.—It is a curious circumstance, that pathologists are not yet agreed regarding the true nature of hæmorrhoidal tumours. According to some, they are varicose expansions of the veins of the rectum. The more general, and doubtless the more correct opinion, is, that these tumours are formed by blood extravasated under the mucous coat of the rectum, and that the cyst of the tumour consists of this membrane rendered tense by pressure. Hæmorrhoids have been divided into the external and the internal, the blind and the bleeding; but these distinctions are of little use in practice, and of no importance whatever in pathology. The only division of the disease which has any practical bearing, is into the functional and structural; or, in other words, the *accidental* and *permanent piles*. Whatever notion may be entertained regarding the essential nature of hæmorrhoidal tumours, all authors agree, that in cases of long standing their contents coagulate and become solid, their coats increase in thickness, and they resemble pendulous excrescent tumours in other situations in the body.

Symptoms.—Hæmorrhoids vary very much in size and form. Some are hardly larger than a pea, while others exceed a hen's egg in size. The symptoms which they occasion may be divided into such as occur in accidental piles (which are obviously referrible to the same condition of the body which produces the tumours), and such as attend permanent piles (as plainly referrible to their bulk and mechanical inconvenience). Accidental piles are frequently attended with a sense of heat and pain at the extremity of the rectum and in the loins, headache and giddiness, flatulence, and not uncommonly marks of general feverishness, such as dryness of the mouth and fauces, rheumatic or gouty pains, restless nights, scanty and high-coloured urine, with a frequent desire to void the urine and fæces. The evacuation by the bowels is painful, and very often occasions the tumours to bleed. In many cases they inflame, sometimes without any obvious cause, but more usually from becoming strangulated by the sphincter ani. The pain which they then create is often extremely acute.

The permanent *organized* piles produce in many instances a degree of inconvenience which interferes most seriously with the active duties and comforts of life. Even when altogether *internal*, they impede by their bulk the passage of the fæces, give rise to severe pain whenever the bowels are emptied, and gradually bring on that train of evils which necessarily follows long-continued constipation. The extent of hæmorrhage from them is also such as to occasion, in many cases, considerable uneasiness. This state of the disease arises, it may be presumed, from a continuance of the same causes which lead to the accidental, or acute hæmorrhoids. With these alone the physician is concerned. When the internal membrane of the rectum has become permanently thickened, the disease can be relieved only by surgical operation. In this place, therefore, my attention will be directed exclusively to the consideration of the causes and method of treatment of the primary or *accidental* hæmorrhoids.

Causes.—1. Piles are frequently a symptom of general febrile excitement. They arise from over-indulgence in food of a too stimulating quality, and the free use of heating wines, such as Champagne. They occur, therefore, along with common febrile symptoms, and for the most part yield spontaneously on a recurrence to a mild and unirritating course of diet.

2. Piles arise, in the second place, from any circumstance that impedes the regular action of the great intestines, so as to cause *straining*. They may concur, therefore, either with costiveness or diarrhœa. A confined habit of body is that which of all others is most disposed to hæmorrhoids. Hence it is that they are so frequently met with in persons of *sedentary* occupation. But the continued use of aloes and other purgative medicines has been often followed by piles. It is fairly to be presumed, therefore, that straining at stool from any cause forces blood into the cellular membrane at the extremity of the rectum, constituting an hæmorrhoidal tumour.

3. Piles appear to be connected in some cases with the local irritation occasioned by horse exercise, and the long continuance in a particular posture. It is a common complaint, therefore, with cavalry soldiers, and mail-coach travellers. I traced it in one instance to the too frequent introduction of a bougie into the urethra. Lastly, hæmorrhoids have been owing to causes impeding the free return of blood by the great abdominal veins. Hence they occur symptomatic of pregnancy, and a diseased state of the liver.

Treatment.—The treatment of hæmorrhoids may be discussed under the two heads of curative and palliative. When the disease arises from a *heated* state of the system, it will be proper to give ten grains of antimonial powder with two of calomel, for three successive nights on going to bed, with a gentle dose of some neutral salt, the following morning. The diet should consist entirely of vegetables and puddings. When it depends upon a naturally costive habit of body, the regular use of some mild aperient, which operates gently and without straining, is indicated. Sulphur has long been recommended for this purpose, and may be given in combination with the electuary of senna. Two tea-spoonfuls of calcined magnesia, taken in milk every morning, is also an effectual remedy. Regular walking exercise is often indispensable to that due action of the great intestines which is the surest preservative against piles.

The local or palliative treatment consists in the employment of leeches and cold lotions, when much inflammation is present, with confinement to the horizontal posture; the careful return of the tumour within the sphincter ani, whenever it has been prolapsed; and the application of the following astringent ointment, where the membrane of the rectum is much relaxed, with profuse bleeding:—

℞ Unguenti sambuci,
Pulveris gallarum, *sing.* ʒss.
Liquoris plumbi subacetatis, ʒj. Misce.
Fiat unguentum.

The conf. piperis nigri, or Ward's paste (an electuary composed of black pepper, fennel seeds, and elecampane root), has been found of use in some cases, but it will oftener disappoint than fulfil the expectations of the practitioner. Dr. Pemberton has found advantage from giving small doses of the balsam of copaiba. Injections of cold water have frequently proved serviceable.

When piles and hæmorrhage from the rectum become complicated with a thickened, or otherwise diseased state of the coats of the mucous membrane, the efforts of the *physician* must be confined to keeping the bowels in a natural state, and to the avoiding of all such causes as may aggravate the sufferings of the patient. The daily passage of the fæces may be assisted by injections of warm water. Where the gut is in a state of ulceration, and blood passes with each stool, nothing can be done but to palliate the symptoms by narcotics, and to enforce the most rigid attention to a mild, unirritating diet.

I beg to refer to surgical works, more especially to Mr. Abernethy's observations on hæmorrhoidal complaints,* and the treatises of Mr. Copeland† and Mr. Mayo,‡ for the most efficient mode of operating upon hæmorrhoidal tumours.

FISSURE OF THE RECTUM.

There is a disease of the rectum, sometimes mistaken for piles, which deserves notice. In consists in a *fissure* of the extremity of the mucous membrane of that gut. It is the result of accident, and commonly arises from straining to evacuate a costive stool. It is attended with *excruciating pain* on every attempt to evacuate the bowels, and for several hours afterwards.

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* Abernethy's Surgical Works, vol. ii. p. 231.

† Copeland on the Diseases of the Rectum and Anus.

‡ Mayo's "Observations on Injuries and Diseases of the Rectum," p. 72.

There is also present spasm of the sphincter ani, and in severe cases the irritation extends to the bladder and urethra. It sometimes lays the foundation of Abscess in Perinœo and Fistula. On account of the continued irritation kept up by the daily discharge of the fæces, the fissured or ulcerated membrane heals with great difficulty, unless recourse be had to the knife, and the sphincter ani be completely cut through.* In mild cases it may be sufficient to apply, within the anus, two or three times a day, a portion of the following ointment:—

℞ Hydrarg. oxydi cinerei, ʒj.
Cerati cetacei, ʒvj.
Pulveris opii, ℈j. Misce.

Pain must be relieved by adequate doses of laudanum; and the bowels should be kept open by castor oil, or the infusion of senna with manna.

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* Mayo's "Observations on Injuries and Diseases of the Rectum," p. 7.

CLASS VIII.

CHRONIC DISEASES OF THE URINARY AND UTERINE SYSTEMS.

CHAP. I.

LITHIASIS.

Objects of Investigation in this Chapter. Depositions from the Urine, primary and secondary. Lithic Diathesis. Circumstances tending to induce or increase it. Depositions of Oxalic Acid and of the Cystic Oxyd. Phosphatic Diathesis. Principles of Treatment in Calculous Affections generally—where the Lithic Diathesis prevails—where the Phosphatic Diathesis prevails. Application of these Pathological views to the determination of questions connected with the operation of Lithotomy.

The frequency of calculous disorders, and the distress which in their confirmed stages they create, have long made them an object of attention to surgeons; but it is only of late years that the *general pathology* of these affections (with which the physician is chiefly concerned) has been prosecuted with any degree of scientific precision. Scheele, in 1776, paved the way to a correct understanding of the subject by the discovery of uric acid; but it was reserved for Dr. Wollaston, in 1797, to complete the groundworks of this branch of medical inquiry by his masterly analysis of urinary calculi, published in the Philosophical Transactions of that year. The investigation has been followed up in this country with equal diligence and success; and the writings of Dr. Marcet,* Mr. Brande,† and

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* An Essay on the Chemical History and Medical Treatment of Calculous Disorders. By Dr. Marcet. Second Edition. 1819.

† Observations on the Medico-Chemical Treatment of Calculous Disorders. By W. T. Brande. (Quarterly Journal of Science and Arts, vol. viii. and in Phil. Trans. for 1810.)

Dr. Prout,* have put us in possession of a number of important particulars, bearing on the formation and pathology of depositions from the urine, which seem well calculated for discussion in an elementary work. It will be my endeavour, in the present chapter, to lay before the student a brief outline of the opinions of these authors, on the general questions connected with lithiasis.

Character of urinary deposits.—Depositions from the urine are of three kinds:—1. Pulverulent or amorphous sediments. 2. Crystalline sediments, usually denominated sand and gravel. 3. Solid concretions, or calculi formed by the aggregation of these sediments. The same pathological doctrines are applicable to each of these forms of urinary deposition, which obviously can never be understood without a knowledge of the constituent parts of the urine, and of the changes which that fluid undergoes in the body, from agents which either act upon it chemically, or by laws peculiar to vitality. It is this which gives to the consideration of lithiasis an interest so much greater than could have been expected to belong to it. The inquiry, in fact, will be found to have a bearing upon *general disease*, as much as upon the deranged operations of the urinary organs, and to connect itself intimately with some of the most intricate points in physiology and pathology. It affords a remarkable instance of the application of chemistry to the theory and practice of physic; and though it would be highly unphilosophical to maintain, that the history and treatment of calculous disorders depend entirely on chemical principles, yet it cannot be forgotten, that before this branch of science was cultivated, our notions of lithiasis were vague and incorrect, and that now, the best pathologist, unacquainted with animal chemistry, is continually exposed to the risk of error.

The most general principle which can be taken as the foundation of our reasonings concerning lithiasis is the division of calculous deposites into *primary* and *secondary*, or those which take place when the disease *first* developes itself, and after it has subsisted for a considerable length of time. The primary consist of the lithic acid (either simple, or in combination with ammonia), and of the oxalic acid in union with lime;

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* An Inquiry into the Nature and Treatment of Gravel, Calculus, &c. By Dr. Prout. London, 1825. Second Edition.

the secondary, of the phosphoric acid combined in various proportions with lime, magnesia, and ammonia. The former derive their chief character from the acid which they contain, the latter from the earthy matters. The first are principally formed in the kidney, the second in the bladder. Hence the distinction into the primary and secondary deposites is nearly equivalent to *acid* and *earthy*, *renal* and *vesical;* but in the present state of our knowledge all these views of the subject require to be taken with certain limitations, nor do I propose them except as the basis of *elementary* instruction.

1. *Lithic Diathesis.*—Under the general denomination of a lithic diathesis, we may arrange, with Dr. Prout, all those states of the system, in which lithic acid is either contained in the urine in more than its natural quantity, or in which the urine acquires a peculiar disposition to *deposit* it, even though its quantity be not morbidly increased. Such a disposition is given to the urine by a very slight excess of *free* acid—either the phosphoric, sulphuric, or carbonic. These conditions of the urine may exist independently of each other; but in most instances they are present at the same time, constituting the *perfect* lithic diathesis. *Sediments* from the urine, having a lithic character, are usually of a brickdust or pink colour, though this is liable to some variation. They consist of the lithate of ammonia. The *crystallized* deposites, commonly called *red gravel*, are lithic acid nearly pure; and many calculi of a large size are composed of the same material.

Several circumstances tend to produce an excess of lithic acid in the urine, and these it will be proper to enumerate.

a. The presence of fever, and of inflammatory action in some part of the system, is always indicated by *lateritious* or pink sediments of the urine, and the deeper the colour the more severe in general are the symptoms. The latter are especially observed to occur in rheumatic, gouty, and hepatic affections The pathological connection of gout and gravel has long been noticed, and their mutual dependence on predominant acidity in the system was a favourite speculation with many old authors. This theory has certainly received some degree of support from the inquiries of modern pathologists. That excess of lithic acid, however, which is the consequence of *fever*, can hardly be viewed as a source of the chronic calculous deposites which it is my object now to investigate. I pass on, therefore, to notice those states of the body independent of fever, which lead to such a result.

β. Of these the most commonly witnessed are simple errors in diet, which may be, either the mere excess of wholesome food; or the partaking of food decidedly unwholesome, or peculiarly difficult of digestion, or such as uniformly disagrees with a particular stomach; or lastly, the indulgence in food at unusual hours. This principle in pathology points out the intimate connection that subsists between gravellish and dyspeptic complaints, to which almost every thing that is important in the treatment of the disease has a reference. It may perhaps be asked, in what manner these derangements of the digestive organs come to increase the formation of lithic acid by the kidney? The question is one of very considerable difficulty. It is not exactly known whether the kidney partakes of the diseased action or not. Dr. Prout is disposed to consider that it does not; and that the mere circumstance of imperfectly assimilated matter being brought in the course of circulation to the kidney, is sufficient to cause the formation of a more than ordinary quantity of lithic acid.

γ. Irregularity in exercise, great fatigue, depressing passions of the mind, inordinate mental exertions, all tend in like manner to produce turbid urine from excess of lithic acid. From these remarks it will appear that the tendency to lithic deposition may often be acquired (like gout) by indolent habits and excess in eating and drinking. But there is still another view of the subject which requires to be taken, before it can be appreciated in its several bearings.

δ. The disposition in the urine to superabundant lithic acid is sometimes *natural*, and not unfrequently *inherited*. Under such circumstances it is usual to see it deposited in the shape of *crystalline grains*, and there is every reason to believe that these are in most instances formed in the kidney. Such a morbid state of the urine often continues for a great length of time, without occasioning any symptoms of peculiar severity; but sooner or later the constant deposition of crystals of lithic acid in large quantity ends in the formation of a calculus. It is a singular circumstance, that in certain countries and districts of countries, the disposition to lithic deposites from the urine is particularly strong, and calculus therefore is considered as *endemic* in such situations. A remarkable instance of the kind occurs in an extensive tract of this country, of which Norwich may be taken as the centre, in which more calculous cases occur than in the whole of Ireland or Scotland. The water, temperature, and peculiar habits of the district, have each, in their turn, been accused as the exciting cause, but the circumstance is still unexplained.* It probably depends upon the diet.

2. Very little is known regarding that state of body in which depositions of oxalic acid take place. It appears, that in this diathesis there is little or no sand voided, and the urine is generally clear. The calculi which contain it are probably formed in the first instance in the kidney, though afterwards increasing to a considerable size in the bladder. Dr. Prout has shown,† from the examination of *alternating* calculi, that the deposition of oxalic acid is both preceded and followed by that of lithic acid; from which it may be inferred that they are of the same general nature. Oxalic acid is formed in the kidney instead of the lithic, where, combining with the lime naturally existing in the urine, it lays the foundation of those rough, hard, and very troublesome concretions, to which the term *mulberry* calculi is usually appropriated. It is a curious circumstance, that in the district of which Bristol may be considered as the centre, this species of urinary calculus is more frequent than any other; at any rate, that it much exceeds its usual relative proportions, as observed in other parts of the kingdom.

I omit the consideration of that deposite which Dr. Wollaston denominated cystic oxyd, on account of its great rarity, and the scantiness of our information concerning it.

3. *Phosphatic diathesis.*—The *secondary* deposites from the urine are commonly *amorphous*, but occasionally also they appear *crystallized.* The former consist chiefly of the phosphate of lime, but with this is generally to be found some portion of the triple phosphate of magnesia and ammonia. The latter consist *invariably* of the triple phosphate.

It has long been observed, that a deposition of the earthy phosphates is attended with a very peculiar group of constitutional symptoms, differing both in *kind* and *degree* from those which accompany the lithic diathesis. They may be characterised as indicating great derangement of the chylopoietic viscera, with general irritability and debility of the system. Among the most prominent of these symptoms may be noticed, nausea, flatulence, costiveness alternating with diarrhœa, the stools having an extremely unhealthy appearance (black, clay-coloured, or yeasty); a sense of uneasiness and weakness in the back and loins, a sallow haggard countenance, languor and depression of spirits, coldness of the extremities. The urine in this state of disease is pale, and more copious than natural. After standing for a short time it becomes opaque, and deposits a copious precipitate of the mixed phosphates in the state of an impalpable powder. It is extremely prone to decomposition, becomes speedily alkaline by the evolution of ammonia, and emits a very nauseous smell. The following appear to be the most important of the pathological principles connected with *phosphatic* depositions.

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* See Dr. Prout's Inquiry, page 139; and Dr. Marcet's Essay, page 28.

† Prout's Inquiry, pages 106 and 159.

1. They are very seldom, if ever, formed in the kidney; nor do they often take place in the bladder without a previous deposite of lithic acid. It has been satisfactorily proved, that very few phosphatic, or white calculi, are to be met with, which have not a lithic or oxalic nucleus. Hence it is, that to this species of urinary deposite we apply the term *secondary*. It is not contended, however, by any means, that a natural or primary disposition to depositing the phosphates is not occasionally observed.

2. The deposition of the phosphates is connected with debility of the whole frame, the result of long-continued dyspepsia, diarrhœa, excessive fatigue, or protracted mental anxiety. It is frequently present at an advanced period of life, and is one of the strongest proofs of the breaking-up of the constitution. Whatever may have been the previous nature of the calculus, the phosphatic diathesis always prevails when the patient's general health gives way.

3. Phosphatic depositions are sometimes the result of a long course of alkaline medicines. Mr. Brande has detailed some experiments,* calculated to show the danger of administering alkaline remedies where there is a tendency to the production of the phosphates. Dr. Prout also acknowledges their mischievous effects, in common with all medicines which act as diuretics.

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* Philosophical Transactions, 1810, p. 143, et seq.

4. A disposition to throw down the phosphates is given, not only by these *general* causes, but by many which act *locally* on the urinary organs, more particularly injuries of the back, and irritations about the bladder, kidney, or urethra, when operating without intermission, and for a considerable length of time. That injuries of the back produce *alkaline* urine, is a very old observation, but it was not known until lately that this was merely a symptom of that phosphatic *diathesis* which such a cause induces. Hence too it is, that the presence of a small uric calculus in the bladder comes at length to produce a decided deposition of the phosphates.

5. It is very seldom observed that phosphatic calculi are encrusted by layers of *lithic* acid; and it is argued, therefore, that the phosphatic diathesis is rarely succeeded by any other. Upon this subject, however, the great authorities are not in strict accordance. Mr. Brande asserts, that such a sequence may sometimes be observed, more particularly after a free use of acid medicines given incautiously while the phosphates are in excess. Dr. Prout, on the other hand, maintains confidently, that a decided deposition of the mixed phosphates (particularly in advanced life) is never followed by other depositions, and that the few exceptions to this law which have been observed are more apparent than real.

6. The question has frequently been discussed, how far depositions from the urine are ever of a *mixed* character. Pathologists are not agreed on this point. Mr. Brande informs us (on the authority of chemical analysis), that cases of mixed sabulous deposite are by no means unfrequent; while Dr. Prout, from an attentive examination of what have been called *compound* calculi, believes that such mixtures are very rare. He states,* that he has never seen an instance of the pure lithic acid intimately *mixed* with the phosphates, nor does he believe that such a compound ever existed in nature.

Prognosis.—I have now to add a few words respecting the period of life at which calculous complaints occur, and the prognosis which may be formed under the different circumstances in which they prevail. Every one must have observed how liable the urine is at an early age to every species of deposite. This particularly happens in children of delicate constitution and weak stomach. In most cases the deposite is white and consists of the phosphates, but in the very beginning of the complaint it is often lithic. The irritability of habit, however, at this age is so great, that the character of the sand frequently changes with rapidity. From tables which have been drawn up, it appears that nearly *one half* of the whole number of stone cases occurring in this country commence prior to the age of puberty. Of the remainder, a large proportion have their origin in early life; but the constitution being then sound, the general health good, and the calculus small, no symptoms are produced. The next period of life most prone to calculus occurs about the age of forty, when gout begins to make its inroads on the constitution. A calculus previously existing in the bladder will rapidly increase at this period, or a nucleus will now be formed for that of advanced life.

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* Inquiry, p. 113.

The phosphatic diathesis occurs most frequently in childhood and old age. Where its exciting causes, however, are strong, it may occur as an original disease, even in the prime of life. When the deposition of the phosphates is merely occasional, it is hardly an object of attention; but if it invariably follows meals, still more if it occurs as white sand, subsiding immediately to the bottom of the vessel into which the urine is voided, it becomes a serious disorder. When thoroughly established in the system it is with difficulty got rid of; and to this circumstance we may trace the large size which white calculi have sometimes attained, rendering their removal from the body, in neglected cases, hazardous, or even impossible.*

The infinitely greater frequency of calculous diseases in the male than the female sex, as well before as after puberty, has been clearly established. It may be ascribed in part to the shortness of the female urethra; but some other circumstances probably concur, which have hitherto eluded the researches of pathologists.

Treatment.—The generally received opinion, that an accurate acquaintance with the chemistry of urinary deposites would lead to clear and definite views of treatment, is founded upon very imperfect observations. The chemical treatment of lithiasis indeed, though much talked of, is, comparatively speaking, of but little service. The practitioner who aims at general success, must be guided by pathological considerations of a higher character. He must look to the state of the whole system, and to that of the chylopoietic viscera in particular. He must bear in mind, that while the urine is in its natural state, no deposition from it will take place, or, if such has already occurred, that the calculus will not increase in size. His object, therefore, must be to keep the urine, as well as other secretions, in a healthy condition; and this is to be done, not simply by an acid, or an alkali, but by strict attention to all that can improve health, or ward off disease. The deranged operation of the urinary organs must certainly be broken in upon, in the first instance, by *medicine;* but the effect is to be kept up by *diet* and *regimen.*

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* In the Philosophical Transactions for 1809 (p. 303), is an account, by Sir James Earle, of a phosphatic calculus, sixteen inches in length, and weighing *forty-four ounces*. Lithotomy was performed, but the stone could not be brought away, and the patient died ten days afterwards.

1. Where the lithic diathesis prevails, laxatives and alteratives are to be employed, so as to promote a due action of the digestive organs; and after them, or occasionally along with them, may be exhibited with advantage some form of alkaline medicine. Five grains of Plummer's pill, or a pill composed of equal parts of colocynth and pil. hydr., or, in robust habits, the more powerful combination of calomel with James's powder, may be given at night, followed the next morning by a Seidlitz powder, or the following alkaline aperient:—

℞ Infus. gentianæ comp.
Aquæ cinnamomi, *sing.* ʒss.
Sodæ carbonatis, gr. xv.
—— tartarizatæ, ʒij. Misce.
Fiat haustus.

This plan may be pursued every night, or every other night, according to the urgency of the symptoms. Once or twice during the day, a tea-spoonful of magnesia may be taken in a glass of soda water, or the liquor potassæ in the dose of twenty drops. This last medicine is best given in barley-water, and liquorice assists in covering its nauseous flavour. All alkaline medicines, whether in a pure or carbonated state, are apt, when long persisted in, to disagree with the stomach. They should therefore be frequently varied.

Much has been written concerning the mode in which alkalies operate in the relief of calculous disorders. The notion of a *solvent* power, so long and so confidently maintained, is now laid aside by the best pathologists, and their use (which none can dispute) is ascribed to their action on the digestive organs; where, either by obviating the formation of acid, or by neutralizing it when formed, they prevent its secretion in the kidney. Dr. Prout considers alkaline remedies as *palliatives* only, allaying irritation, and in the case of magnesia, promoting a laxative operation.* He further gives it as his opinion, that *general* remedies (especially purgatives, judiciously administered, and never carried to excess) are those upon which reliance is chiefly to be placed.

The remarkable exemption from calculous complaints enjoyed in hot climates, has been frequently mentioned as a hint in practice. It has been attributed to the uniform moist state of the skin, and it certainly points out the propriety of attention in all cases to exercise and warm clothing, and perhaps the occasional use of a warm bath.

2. The treatment of those calculous cases where a *phosphatic* diathesis prevails, must vary with the duration of the disease, and the consequent degree to which the general health has suffered. They will often be found to yield to the same remedies as have been already recommended; proving that the two great forms of urinary deposition are much more intimately connected than is commonly imagined. In children, and adults where the general health is little impaired, the occasional use of rhubarb and calomel in moderate doses will prove highly serviceable. In the majority of cases benefit will be derived from *tonic* medicines; and the peculiar advantages of *acids* are equally suggested by chemical and pathological considerations.

The mineral acids (sulphuric and muriatic) have been most usually employed; and where they agree with the stomach, often give a decided check to the symptoms in a few days. Uva ursi, bark, and other astringent vegetables, may be had recourse to with the best effects in protracted cases, where the tone of the stomach is weakened, and the constitution much reduced. Saline purgatives, active diuretics, and alkaline remedies, must now be carefully avoided, both with reference to the general and urinary system. Above all, during the presence of a phosphatic diathesis, the *mind* is to be set at rest. Absence from care, change of scene, the sports of the country, and regular hours, have a surprizing influence upon the disease, and often prove effectual where medicines have failed.

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* Medico-Chirurgical Transactions, vol. viii. p. 549.

In every variety of calculous deposition, strict attention is of course to be paid to diet; but we can hardly concur with those modern pathologists who have attempted to regulate this also by chemical principles. The excrement of animals feeding solely upon animal matter, contains uric acid in considerable quantity. It has been argued, therefore, that vegetable food should be preferred where the lithic, and animal food where the phosphatic disposition exists. The fact is curious, but the practical inference incorrect. That diet is in every instance to be preferred which agrees best with the stomach.

In the treatment of calculous cases, it is necessary to look to the degree of irritation prevailing in the system generally, and in the kidney particularly. Opium, hyoscyamus, and other sedatives, are often indispensable, and in most cases will be found useful auxiliaries. Where there is much pain in the loins, a galbanum or opium plaister may be recommended. If manifest injury has happened to the back, an issue or seton should be had recourse to.

It is hardly necessary to remark, that these observations on the treatment of lithiasis are intended to apply to those cases which are strictly constitutional, where no actual calculus has formed, and where no disorganization of the urinary organs has taken place. The treatment of such only is in the hands of the physician; but it will be obvious that the same general principles must apply in every variety and stage of the disease. This may be illustrated by showing how the doctrines now delivered become subservient to the determination of questions connected even with the operation of lithotomy.

Lithotomy, or its milder substitute, lithotrity, is to be recommended, without delay, whenever a calculus, no matter of what species, is ascertained to exist in the bladder before puberty; and in after life, when the phosphatic diathesis is fully formed. It is worthy of remark, that children upon whom lithotomy has been performed are not more liable than others to calculous complaints, at an advanced period of life. On the other hand, the operation may be safely postponed, when the calculus is small, and the lithic disposition steadily present,—provided the patient be in the prime of life, his general health sound, and he himself willing to conform to regular living. Under all other circumstances, the retention of a calculus in the bladder is to be dreaded, not only on account of the intensity of present suffering, but the probability of its future increase.

CHAP. II.

DISEASES OF THE KIDNEY.

Nephralgia. Symptoms and Mode of Treatment. Nephritis. Abscess of the Kidney. Hæmaturia. Ischuria Renalis. Its causes. Prognosis. Method of Treatment.

NEPHRALGIA.

The presence of a calculus in the kidney is not necessarily followed by distressing symptoms. Instances are recorded where a calculus of considerable size, nay even a large collection of calculi, have been found, after death, distending the kidney, without any one symptom having occurred which could lead to an idea of disease in the urinary organs. In most cases, however, when a calculus becomes *impacted* in the kidney, suppuration and gradual wasting of that organ take place. This is generally accompanied by an *obtuse* pain, or sense of weight in the lumbar region, aggravated by exercise, especially by riding on horseback. There is also retraction of the testicles, and a sense of numbness extending down the inside of the thigh on the affected side. The urine is commonly of a deep red colour, depositing either sand or sediment. It is voided frequently, and in small quantity at a time. A person may exist for a great number of years with this affection, without materially suffering in his *general* health; but in most instances it brings on bloody urine, and ultimately proves fatal.

The *retention* of a calculus in the kidney is, after all, a rare occurrence. Far more commonly, while yet of moderate size, it quits the pelvis of the kidney, and descends into the bladder. There can be no doubt but this has *sometimes* taken place without pain or uneasiness, even where the stone was of considerable size. In the majority of cases, however, the descent of the calculus along the ureter is accompanied by very well marked symptoms, constituting nephralgia, or in common language, *a fit of the gravel.* There is a *sudden* attack of very acute pain in the region of the kidney, with violent sickness and vomiting. The pain extends to the groin, and is generally attended by *numbness* of the thigh, and retraction or pain of the testicle. The urine is discharged in small quantity, high coloured, and often mixed with blood, or with mucus tinged with blood. Dr. Pemberton has noticed, as occasionally accompanying this state of disease, a sympathetic pain in the parietes of the abdomen midway between the os ilium and navel, increased by pressure, and in some cases so acute as to arrest the whole attention of the patient.

The distressing symptoms now enumerated are of very variable duration. They usually terminate as suddenly as they began, marking the moment at which the calculus escapes from the ureter into the bladder. There it remains for a longer or shorter time, when it either enters the urethra, and is ultimately discharged from the body, or begins to occasion some of the symptoms of *stone in the bladder*. In a few unfortunate cases the calculus becomes permanently retained in the contracted portion of the ureter, producing that train of symptoms which usually attends disease of the urinary system, and terminating in disorganization of the kidney, and eventually the death of the patient.

A fit of the gravel has been mistaken for lumbago. It is to be distinguished by the nausea which attends it, by the changes observable in the secretion of the kidney, the affection of the testicle, and the pain continuing unaltered by any variations in the posture of the body. Attention to the same symptoms will serve to distinguish nephralgia from a fit of the colic, with which also it is liable to be confounded.

In the treatment of nephralgia the principles laid down in the last chapter for the relief of the lithic diathesis may be applied; recollecting, that here high irritation and feverish action are superadded to great excess in the formation of uric acid. An active purgative is often of essential service. When the pain is very acute, blood may be taken from the loins by cupping, or even from the arm. The patient should be placed in a warm bath, and a full dose of opium given every second or third hour, according to the urgency of the symptoms. Starch glysters, with laudanum, contribute materially to the patient's relief, but opium should not be employed until the lower bowels have been freely emptied by the extr. colocynth. comp. aided by a brisk purgative enema, which, of itself, will generally afford considerable ease. Stimulating diuretics are to be carefully avoided.

NEPHRITIS.

Nephritis, or inflammation of the kidney, may have its seat either in the substance of that organ, or in its capsule and surrounding cellular membrane. The former occurs only as a consequence of calculi retained in the kidney, and wherever met with, has, I believe, always a *chronic* character. The latter has been observed, in a few instances, as an *acute* idiopathic affection, arising from exposure to cold, or severe horse exercise.* The symptoms in no respect differ from those of nephralgia, except that the pulse is here frequent and hard, and the tongue loaded, with other marks of inflammatory fever. In severe cases, the secretion of urine is, for a time, almost entirely suspended. The treatment of inflamed kidney must be conducted upon the usual principles. General and local blood-letting, mild purgatives, frequent emollient glysters, and demulcent drinks, are our principal resources. Blisters should of course be avoided. Opiates may be administered where we have reason to suspect the presence of calculus. The warm bath is not to be recommended until free blood-letting has diminished the volume of the circulating fluids. Otherwise the sensations of pain and distension in the lower belly, and back, will be augmented by it, with a corresponding increase of fever.

RENAL ABSCESS.

Inflammation of the kidney, duly treated, may subside without any serious consequences; but in most instances, in spite of every care, it terminates in *abscess*, a lamentable and not uncommon state of disease. Dr. Baillie observes,† that no considerable gland of the body is so liable to form abscesses as the kidney. In some cases which he has seen, they appeared to be of a common kind, but the greater number partook of the nature of scrophula. He considers it probable, that calculi in the kidney are the immediate cause of the inflammation, which, however, receives its character from the constitution of the patient. The existence of abscess of the kidney may be known by the voiding of pus with the urine, subsequent to, or accompanied by, the usual symptoms of diseased kidney. We further learn from the same experience, that renal abscess is sometimes complicated with enlargement of the kidney. Patients may continue to live with this complaint for a very long time. The formation of matter will sometimes be suspended for several months, but very trifling circumstances will renew the symptoms. Permanent recovery from renal abscess is rarely witnessed. Medicine produces little or no effect upon it. A seton in the loins with the uva ursi have occasionally proved serviceable. Great quiet of body and uniform temperate living are useful in mitigating urgent symptoms, and retarding the progress of the disease.

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* See particularly a case by Dr. Turner in the College Transactions, vol. iv. page 226.

† Morbid Anatomy, page 288.

Causes.—A predisposition to ulcerated kidney, and generally to disease of the urinary system, is given by the decline of life. A very large proportion of old people suffer under some morbid affection of these organs. In one it takes the form of calculus, in another of diseased prostate, in a third, of irritable bladder, in a fourth, of chronic inflammation and abscess of the kidney.

The researches of pathologists, and particularly of Dr. Cheston,* have proved the dependence, in many cases, of abscess of the kidney upon the presence of a stone in the bladder. Dr. Cheston adds, that the sympathy is mutual, and that abscess in the kidney leads, in its turn, to diseased and irritable bladder.

The complete destruction of one kidney is not necessarily fatal. Where the constitution is sound, the other kidney has sometimes enlarged so as to do the office of both, and life has been preserved, and even rendered comfortable, under such circumstances. Occasionally a true *scirrhous* enlargement of the kidney takes place; and though instances are not wanting of such a disease remaining unsuspected during life,† yet, in most cases, it is attended with the voiding of bloody urine, a constant pain in the loins, aggravated by the slightest motion, and a lingering death.

HÆMATURIA.

Hæmorrhage from the urethra sometimes occurs along with hæmatemesis, and other marks of a general hæmorrhagic tendency. But in the majority of cases it is symptomatic of local disease in some part of the urinary system. I have seen it occur with fever, pain about the region of the bladder, constant desire of micturition, and other unequivocal evidences of inflammation of the bladder. It is seldom, however, of sufficient violence to prove hurtful by the mere quantity of blood lost. The prognosis, therefore, and treatment of this hæmorrhage, merge in those of the primary affection, and hardly merit a more specific notice.

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* Cheston's "Pathological Inquiries," chap. ii.

† See Medical Observations and Inquiries, vol. vi. page 236.

ISCHURIA RENALIS.

If the importance of any disease could be estimated by the survey of a system of nosology, ischuria would stand foremost among the disorders of the human race. Subdivisions of this disease have been made with tedious minuteness, but they are altogether useless in practice. The only species with which the physician is concerned, is the ischuria renalis; a few observations on the history of which will conclude what I have to offer on the chronic diseases of the urinary system.

Ischuria renalis is a very rare form of disease, in which the functions of the kidneys are suspended, and the urine is retained in the blood. The accompanying symptoms are, a dull pain, or sense of weight in the iliac regions, with great anxiety; nausea, vomiting, hiccup, cramps, general irritability and restlessness, or sometimes delirium, lethargy, and coma. It is occasionally attended with a constant desire to void the urine, though the catheter proves that none is in the bladder. The taste of the urine has been discerned in the mouth, and in many instances a remarkably strong urinous smell has been perceptible in the perspiration.

The causes of this affection are various. It seldom occurs except in advanced life. It has been traced to cold in habits of body liable to gravellish complaints. A more common cause of the disease may be found in local irritations in one kidney, operating by sympathy on the other; such as calculi, hydatids, and schirrhus. Lastly, it would appear from the progress of the disease, that it has originated, in a variety of cases, from some affection of the brain and nervous system. It is an important pathological fact, that this paralytic state of the kidney is almost always succeeded about the second or third day by marks of fatal oppression on the brain.* Dr. Heberden indeed relates a case where the retention existed seven days, and the patient recovered; but it has been well remarked by Sir H. Halford, that a very small measure of urine is sufficient for the exigencies of the constitution, and that it is the *total* cessation of the secretion which is so uniformly fatal.

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* See a paper by Sir Henry Halford on "The Necessity of Cautious Prognosis;" College Transactions, vol. vi. page 398.

The treatment of ischuria renalis consists in the employment of the warm bath, of the stimulating diuretics, and terebinthinate injections. Opium has been advised, on the supposition of some spasmodic stricture existing in the vessels of the kidney. Cupping from the back of the neck, and a brisk purgative, appear more consonant to the suggestions of general pathology.

CHAP. III.

AMENORRHŒA AND CHLOROSIS.

Remarks on the general influence of disturbed uterine Functions. Amenorrhœa. Division of the Disease into Retention and Suppression of the Menses. Accompanying Symptoms. Plethora and irregular determinations of Blood. Debility. Characters of Chlorosis. Causes of retained and obstructed Menstruation. Treatment. Agency of Emmenagogues. Of Dysmenorrhœa. Of the Turn of Life.

THE high importance of the uterine functions in the animal economy cannot be doubted; and from the earliest ages ingenuity has been taxed to explain them, and to ascertain the extent of their influence both in health and disease. The menstrual flux, the most obvious of the uterine phenomena, has afforded a wide field for pathological discussion; and being a constant object of attention to females, has thus acquired a consequence which fixes it upon the notice of the medical practitioner. Its overflow or suppression are continually adduced as the causes of disease; and in different ways it has become interwoven with the opinions entertained of almost every complaint to which the female sex is exposed. Before entering on the consideration of the diseases of the uterine system, a few remarks, calculated to place this subject in its proper light, may not be without their use.

The functions of the uterus are veiled in almost impenetrable obscurity, and it is hardly possible for us to reason at all concerning them without falling into error. Much caution, at any rate, is necessary, that the natural bias on our minds in regard to the menstrual flux does not induce us to impute to it an influence in disease greater than it really possesses; and thus to withdraw our attention from considerations more general, better ascertained, and therefore more practical. So strongly has the necessity of this caution impressed itself on some late pathologists,* that they have been tempted to exclude entirely, from their speculations on the origin of disease, the influence of the uterine system. This view of the subject, however, cannot be supported. Every one must admit, that there are certain combinations of symptoms which occur *only* to women, and not to them except at particular periods of their lives. The strictest pathology would authorize us in attributing such phenomena to what constitutes the peculiar feature of that sex and age—the uterine system. Upon the whole, therefore, I am inclined to think that the influence of the uterine functions in the production of disease is unquestionable, though fully satisfied, as I shall hereafter point out, that the consideration is of pathological rather than of *practical* importance.

Amenorrhœa is of two kinds; the first where the menses do not begin to flow at the period of life when they usually appear in other women; the second, where, having occurred and continued for some time, they are interrupted. Nosologists distinguish these two states of the disease by the terms amenorrhœa emansionis, and suppressionis. In common language they are called *retention* and *suppression* of the menses. In neither a pathological nor practical point of view do these species of the disease differ essentially from each other. Their accompanying symptoms are nearly alike. They arise, as far as we can form a judgment, in a great measure from the same causes, and their treatment is to be conducted on the same principles.

Amenorrhœa emansionis.—There is considerable diversity in the period at which the menstrual flux first appears, depending partly on the climate, and partly on the habit of the individual. In this country, and in healthy constitutions, it commonly shows itself about the age of fourteen; but the delay of some months, or of one or two years, is not to be viewed as a source of uneasiness. Retention of the menses for even a longer period than this, is not always to be considered as a disease. It is compatible with a state of robust health. Notwithstanding this, the anxiety of mothers frequently prompts them, under such circumstances, to solicit the advice of a physician. It is scarcely necessary to say, that these cases are on no account to be interfered with. A practitioner could hardly flatter himself that he understood better than nature the management of the female constitution.

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* See Hamilton on Purgative Medicines, pages 98, 110, and 126.

Circumstances, however, are widely different when, about the age of seventeen, a young woman who has never menstruated, begins to droop in her general health. The symptoms which accompany this state of the uterine functions are very various, but they may be characterized generally as the indications of a weak and irritable habit. Those of dyspepsia and hysteria predominate, and the system sinks into that state which nosologists have very aptly designated by the term *chlorosis*. The phenomena, which present themselves in this condition of body, will soon be described. In the meantime I may notice all that appears to be known regarding the causes of *retained* menses. In almost every case which requires medical assistance, this symptom will be found associated with some unequivocal marks of scrophula. It is frequently followed by, or connected with, *consumption*, and it must therefore be viewed in a great measure as depending on the *scrophulous* habit of body.

Amenorrhœa suppressionis.—Suppressed or obstructed menstruation may be either acute or chronic. The acute or accidental obstruction arises from cold, or perhaps some strong mental emotion, is attended with slight feverish symptoms, and is for the most part relieved in a short time by a gentle diaphoretic. Chronic obstruction of the menses, on the other hand, is a complaint of a more serious kind, and is accompanied by two very different trains of symptoms.

1. *Amenorrhœa plethorica.*—In one variety there are marks of plethora, or of irregular distributions of blood. Sometimes the head is affected, and constant excruciating headache, with giddiness on stooping, and paroxysms of epilepsy or mania, are the urgent symptoms. At other times the stomach principally

suffers; and there occur loss of appetite, flatulence, fits of dyspnœa, and a very disturbed state of the alvine evacuations, but without corresponding emaciation. In a third set of cases, the arterial system is that on which the violence of the disease falls, and the leading symptoms are hæmorrhagies from the stomach, nose, or lungs, with a frequent and often full pulse, a flushed face, and a constantly loaded state of the tongue. In very many instances, symptoms are present referrible to each of these classes. Perhaps the most common combination of symptoms giving evidence of an obstructed condition of the uterine system, is pain of the left side (about the region of the spleen), headache, and occasional epistaxis. The pathologist will remark, with surprise, to what an extent the symptoms may proceed in this state of disease, without any cause for immediate alarm; and how long they will continue without serious injury accruing to the constitution. He will frequently have occasion, too, to notice, that the same anomalous train of symptoms occurs, not merely with complete obstruction, but with *irregular* states of the menstrual secretion.

2. *Amenorrhœa chlorotica.*—In the other variety of chronic obstruction of the menses, we may observe all the most unquestionable evidences of a *weakened* state of body. It is to this very remarkable combination of symptoms, seldom witnessed, except in young women, and in them, for the most part, under these circumstances of the uterine function, that nosologists have given the name of chlorosis. The peculiarities of this condition of the system will require a more detailed notice.

CHLOROSIS.

This appellation is derived from the appearance of the skin, which losing its natural mixture of red and white, acquires a pale, sallow, or sodden aspect, generally attributed to a diseased secretion of the sebaceous glands, and sometimes, though I believe very unjustly, to diseased liver. The eyes are *pearly*, and appear sunk in their orbits. A dark circle is particularly apparent beneath them; the lips lose their colour; there is a degree of anasarcous puffiness over the whole body. The eyelids are swelled in the morning, and the patient complains of a weight in the loins from œdematous accumulation there. There is great languor and listlessness, and aversion to all kinds of motion or exertion. Pains of the side, loins, and legs, are complained of. The least exercise occasions fatigue and accelerated respiration, frequently amounting to dyspnœa. This is particularly apparent in going up stairs. A sense of suffocation or tightness across the chest, too, is frequently noticed; and these symptoms render it probable that some accumulation of serum has taken place in the cellular tissue of the lungs.

The heart is liable, from very slight causes, to palpitation and syncope. The pulse is quick and small, or sometimes natural in point of frequency, but *very feeble*. Occasionally there may be observed that throbbing of the temporal arteries which is so common in cases of great general weakness, especially from profuse bleeding. The appetite is bad, often entirely lost, and sometimes strangely depraved. Dyspeptic symptoms are particularly distressing.

The mind sympathizes with this morbid condition of the body. The patient gradually falls into that irritable state when slight and trivial causes produce great uneasiness; when the opening of a door, or the entrance of a stranger, hurries the pulse and aggravates the symptoms. In common language, she is *nervous* and hysterical.

This state of things may last for a great length of time—a twelvemonth or more; sometimes aggravated, but never entirely subsiding. By degrees, if no relief is obtained by the efforts of art or nature, the symptoms occasionally assume a more serious character. Anasarca supervenes, or a genuine hectic is at length developed; and the patient, after a most painful and protracted illness, dies consumptive. More frequently, the disease, in the course of two or three years, wears itself out. The whole train of symptoms denotes a weakened state of the general system and great laxity of fibre. Very little is known regarding the causes of chlorotic amenorrhœa. It seldom originates after the age of twenty-three. It may sometimes be traced to circumstances which obviously debilitate the body, such as want of air and exercise, sedentary employments, bad food, and bad air; but it often takes place where these causes cannot operate, as in the upper ranks of life. It is a frequent complaint among the domestic servants in this town soon after their arrival from the country, and it then may reasonably be attributed to the sudden change from the active employment and pure air of a farm-yard, to the close confinement and heated atmosphere of a London kitchen.

Treatment.—The treatment of amenorrhœa is to be guided altogether by a consideration of the character of the attendant symptoms, without reference to the state of the uterine functions. To the practitioner, therefore, it is a matter of indifference, whether the obstructed menstruation be the *primary* cause of all the symptoms, or only one in the general series. Such an opinion, indeed, is in direct opposition to a long-established theory in medicine. It was at one time a prevailing belief, that certain drugs possessed a peculiar property of exciting the uterine vessels to action, and the treatment of amenorrhœa was thus reduced to a fixed principle. Juster notions of pathology have banished the tribe of emmenagogue medicines. It is now acknowledged, that the uterine functions can be restored only by measures possessed of *general* efficacy; and that when the system returns to a healthy condition, menstruation, which is a healthy action, will in most cases naturally follow. To bring the system into this desirable state, we must, in some instances, have recourse to lowering, in others, to *tonic* remedies. Symptoms must be closely watched and treated as they rise. Unbiassed by theory, the student must learn, that in this disease, more perhaps than in any other, he may require to take blood one day, while he supports the system the next.

When obstructed or irregular menstruation is attended with marks of strength of the general system, and local determination of blood, great benefit is derived from a small bleeding at the arm. It is in fact, in many cases, the only means in our power of relieving the urgent symptoms. A hip-bath is useful with the view of diffusing the circulation generally, and of taking off any spasmodic constriction or chronic inflammatory action which may exist in the vessels of the uterus. Low diet, saline purgatives, but above all regular exercise in the open air, will contribute to a favourable result. I have noticed in several cases, that nothing tended so effectually to assist the constitution in throwing off this disease as change of climate.

Many cases, however, of obstructed, and *almost all* of *retained* menstruation, are attended with those marks of languid circulation and of debility or atony, which we generalized under the title of chlorosis. This state of body demands a very different system of management. If, as generally happens, there are evidences of accompanying disorder in the stomach and primæ viæ, a gentle emetic or a mild purgative may with propriety be premised. But the great object of treatment is to give tone to the system. Systematic writers add, that we are further to attempt to excite the uterine vessels to action.

The first indication is fulfilled by directing moderate exercise, a nourishing diet, change of air, cold bathing during the summer season, and the use of some bitter medicine that may improve digestion, or of a more powerful *tonic*, that may strengthen the constitution generally. A weak infusion of calumba or cascarilla may be given in the first instance, and the more powerful bitters afterwards, as the tone of the stomach improves. Attention must be paid to secure regularity in the alvine evacuation, and the bitter purgatives combined with myrrh have long enjoyed a high reputation in the treatment of this disease. Five or ten grains of the pil. aloes c. myrrha may be taken every night at bed-time.

Steel possesses the most unquestionable power over this form of constitutional weakness. In no other state of disease, indeed, is its direct tonic virtue so unequivocally demonstrated. Six drachms of the mistura ferri composita, with an equal quantity of cinnamon-water, may be given twice a day, and the dose gradually increased. The pilulæ ferri cum myrrha, in the dose of ten grains twice a day, may be substituted, should it disagree with the stomach. The *form* of the medicine may be frequently varied; and as all tonics lose their effect by long continuance, their employment should be occasionally suspended. Where great languor and lowness of spirits prevail, camphor, the volatile alkali, and the spiritus lavandulæ compositus, will be found very serviceable.

Emmenagogues.—Of the influence of *direct* emmenagogues, I have already expressed my total distrust. In cases, therefore, where we have succeeded by these means in strengthening the system, and the menses still remain obstructed, time, and those inexplicable changes which take place in the constitution in the progress of life, can, I believe, be alone relied on. But their operation is commonly too slow for the anxieties of parents, and a variety of *stimulating* drugs have been resorted to with the view of *forcing* the uterine vessels to action. Of these the most in repute are, the tincture of hellebore, the powder and oil of savine, the tincture of cantharides, galbanum, the secale cornutum, and the oil of turpentine. That they have occasionally succeeded it would be in vain to deny; but in many cases they disorder the stomach and bowels, and are much better avoided. Electricity has been recommended with the same intention, and has proved useful in a few cases. The cheerful amusements of society, however, have an influence over the actions of the uterus much greater than what belongs to any means of a more directly *remedial* character.

DYSMENORRHŒA.

Painful menstruation is a common, and, though not a dangerous, a very distressing state of disease, in which medical assistance is frequently solicited. The pain in the loins is often in the highest degree acute, lasting generally for a few hours, but sometimes extending to two, or perhaps even three days. Small portions of coagulable lymph are sometimes discharged along with the menses, which are usually scanty. It sometimes happens that dysmenorrhœa is attended with several of those symptoms of general constitutional disturbance already described (page 584) as accompanying chronic obstruction of the menses in plethoric habits. Under such circumstances, the occasional use of aperients, with regular exercise, will contribute to the relief of the patient. The disease, too, admits of some relief from a small blood-letting, the hip-bath, sitting over the steam of hot water, and other relaxing measures. But the remedy of most service is brandy and water, or hot gin and water, which will seldom fail, in conjunction with hot cloths applied to the lower bowels, to bring on the discharge, and thus relieve the pain. The volatile tincture of guaiacum has been recommended, and is probably serviceable on the same principle—*viz.* as a diffusible stimulant. Narcotics are also sometimes resorted to; as Dover's powder, in the dose of ten grains, given alone, or in combination with the extract of conium. They are certainly of some use; but in very many cases the disease recurs with unconquerable obstinacy, and baffles for a time every effort of medical skill.

CESSATIO MENSIUM.

On the cessation of the menses, which usually happens between the forty-fifth and fiftieth year of life, complaints often make their appearance, the system being then left extremely susceptible of morbid impressions. To such a disorder, whatever be its nature or character, the term *turn of life* is commonly applied. For the most part, the symptoms are such as indicate plethora and irregular determination of blood to the head, such, for instance, as headache, sleepiness, giddiness, and epileptic fits. Sometimes the thoracic or abdominal viscera suffer. There occur dyspnœa, with fulness of pulse, irregularities of the heart's action, abdominal pains, or dyspepsia. At other times leprous affections occupy the skin. Diseases of the liver, schirrus of the uterus and mammæ, and chronic ailments of every description, are liable to originate, or at any rate to develop themselves, at this particular period.

The treatment must vary according to the character of the symptoms and the habit of the individual. In almost all cases some blood may be taken from the arm with manifest advantage. An issue is often serviceable. Attention must be paid to diet and regimen, with the view of avoiding the more direct causes of disease. Lastly, the system must gradually be strengthened by bark, bitters, and chalybeates; taking care to regulate the bowels by appropriate aperients.

CHAP. IV.

MENORRHAGIA.

Division of Menorrhagia into Species according to the state of the Uterus—and of the general system. Phenomena of the common or active Form of Menorrhagia. Of passive Menorrhagia. Their Causes and Consequences. Treatment. Pathology and Treatment of Leucorrhœa.

THE pathology of menorrhagia is very complicated; and before entering on the consideration of that variety of it which strictly falls within the province of the physician, I shall attempt to explain under what different circumstances it occurs, and how necessary in practice is a division of it into species.

1. The term menorrhagia is, in the first place, applied both to profuse menstruation, and to actual hæmorrhagy from the uterus. I take it for granted that the student is informed of

the *physiology* of the uterine functions, and is sensible that the menstruous fluid is not pure blood, but a peculiar *secretion* from the vessels of the uterus. Menstruation is considered as *profuse*, either when the quantity is greater than natural, or when the intervals are shorter. This state of the function is sometimes, but by no means always, an object of medical care. There is great diversity in the *quantity* of the menses in different women, in different climates, and in the same woman under different circumstances; and this must be borne in mind when estimating the degree in which menorrhagia exists. Here, as in the case of obstructed menstruation, *accompanying* symptoms must be looked to; and an inordinate flow of the menses is not to be viewed as a *disease*, unless coupled with pain, fever; weakness, or disturbance of some other function.

2. The discharge of *blood* from the uterus is to be distinguished, as it occurs connected or unconnected with pregnancy. The former opens one of the most extensive and interesting fields of inquiry in the obstetrical department of medicine. It requires, however, a previous survey of the physiology of the impregnated uterus, and is therefore unfitted for investigation in this work.

3. Cases of hæmorrhagy from the unimpregnated uterus admit of an important practical distinction, into such as are purely functional, and such as are connected with organic disease of the uterus, more especially cancerous or malignant ulceration about its cervix. Nothing can be imagined more distressing than this latter state of disease. One of the first evidences of it is a gush of blood from the uterus, which recurs at intervals. In its progress it is attended by severe pains of the loins and thighs, failure of the appetite, extreme weakness, and emaciation. The flooding at length is almost constant, and the patient, after the lapse of some months, dies bloodless and exhausted, but with a mind painfully sensible to the miseries of her own situation. Such a case can be relieved only (and that partially) by the internal administration of narcotics, beginning with cicuta and ending with opium, and by the use of emollient, astringent, and anodyne injections.

4. Hæmorrhage from the uterus, strictly functional, occurs in two different states of the general system. It is sometimes attended with marks (more or less distinct according to the period of the disease) of increased action throughout the body,

and is undoubtedly *dependent upon* such a state of constitution. This is the *usual* form in which menorrhagia occurs in the practice of the physician. It may be distinguished by the name of *active* or common menorrhagia, and it is to this variety of the disease that my attention will principally be directed. On the other hand, it is *occasionally* observed in connection with general weakness. There is here, however, an obvious source of fallacy, to which I shall presently advert.

5. Lastly, menorrhagia requires to be considered in some degree as a *local* disease, and it will be found to concur with very opposite states of the uterine vessels. It is sometimes the result of local increased action, independent of any general febrile disturbance. On this principle we explain its being a sequel of frequent miscarriages, and a common complaint among prostitutes. At other times, it is as obviously connected with a morbid degree of relaxation in the uterine vessels. The parts are relaxed to the touch. Instead of the firm feel of health, the uterus gives to the finger the sensation of œdema or flabbiness.

Symptoms.—After this enumeration of the several circumstances, both constitutional and local, under which menorrhagia appears, I recur to that form of the complaint in which I have stated that the advice of the physician is most usually sought. The *active* hæmorrhagy from the uterus is attended with fever. It is ushered in by rigors, headache, severe *bearing-down* pains of the loins, followed by a hot skin, thirst, restlessness, and a frequent, hard, or full pulse. The discharge of blood varies in quantity, but is often very profuse. The same habit of body continuing leads to many symptoms of *debility*—œdematous feet, cold extremities, paleness of the skin, a weak pulse, lassitude on taking exercise, dyspepsia, palpitations, and a sensation of sinking at the pit of the stomach. In this state of *apparent* or febrile debility, the patient may perhaps *first* come under the notice of the practitioner; and he will then often find it difficult to divest himself of the impression that these symptoms indicate the true nature of the disease, and the necessity of *tonic* medicines. Such cases, however, are very different from those of *passive* or *atonic* hæmorrhagy, and they may commonly be distinguished by tracing the symptoms to their origin, and by some *lurking* proofs of the existence of feverish action. The tongue perhaps is white, and the urine high-coloured and scanty, or there is thirst, and disturbed sleep. These are the symptoms which in such cases should be the guide to our practice.

The genuine *passive* hæmorrhagy from the uterus is a much rarer species of the disease. It occurs principally to women in the lower ranks of life, and arises from a scanty and impoverished diet, laborious exercise, bad air, and long watching. I have noticed in dispensary practice, that washerwomen and night nurses who live much upon tea, and undergo great bodily fatigue, are those who chiefly labour under it. Whatever debilitates the body generally, will, under certain unfavourable circumstances of the uterine system, bring on atonic menorrhagia.

Causes.—Common or active menorrhagia, on the other hand, has for its exciting causes whatever will increase plethora, and determine the blood with more than ordinary force into the vessels of the uterus. In the upper ranks of life it is brought on by too full living, heated rooms, late hours, and the want of sufficient exercise;—in the lower ranks, by the abuse of spirituous liquors;—and in both by exposure to cold. Akin to these causes of menorrhagia are those which operate locally,—excess in venery, costiveness, and consequent straining at stool, severe exercise, and even long-continued dancing.

Other circumstances, however, must be taken into consideration in developing the causes of uterine hæmorrhage. It is a very rare complaint with young unmarried women, and it cannot be doubted that frequent child-bearing gives a predisposition to it. It seldom originates even with married women before thirty years of age; but from that time to the period when the menstrual discharge ceases, the tendency to it greatly increases. Many women, indeed, who had never suffered from the disease before, experience it to a greater or less degree at the time of the cessation of the menses. It is well ascertained also, that there exists in some women a *natural* inherent weakness of the uterus, and consequent proneness to menorrhagia.

Prognosis.—Functional hæmorrhage from the uterus is not a dangerous disease. When very obstinate, it saps the foundations of the constitution, and induces more alarming complaints; but a fatal event from the mere loss of blood is hardly upon record.

Treatment.—Menorrhagia, when it occurs as an active hæmorrhagy, attended with fever and bearing-down pains, must be combated by *depleting* measures adapted to the violence of the disease. Blood-letting is often necessary. If there be much pain in the loins, we should direct cupping in that part to the extent of ten or twelve ounces. Saline aperients should be given so as to ensure an open state of the bowels. A light spare diet is to be enjoined, and confinement to a bed or sofa. The bed-clothes are to be as light as is consistent with comfort. Napkins dipped in ice-cold water are to be applied to the lower parts of the abdomen. Cold injections holding in solution alum, or the sulphate of zinc, may be thrown up three or four times a-day; or in slighter cases the parts may be frequently moistened with a sponge dipped in some astringent lotion, such as the liquor aluminis compositus.

If the stage of active excitement demanding these vigorous measures should have passed by before assistance is required, the practitioner will be careful to regulate his treatment on the same principles, while he proportions his means to the strength of the patient's habit. A pill containing three grains of James's powder, and two of the pilula hydrargyri, should be given every six or eight hours, in conjunction with a common saline draught, and the same attention must still be paid to diet and regimen. If all marks of feverish action have subsided, the mineral acids, which are both astringent and tonic, will be found eminently serviceable. They are commonly given in the infusion of roses, to which a proportion of Epsom salts may be added, when necessary, so as to act gently on the bowels. The decoction of bark with acid is a favourite and very efficacious formula in those cases where the constitution is much enfeebled. In the event of its failure, we must attempt to check the hæmorrhage by more powerful astringents, as alum, kino, or the cerussa acetata. Decoctions of pomegranate or oak-bark, containing alum, should be frequently used in the form of injection. If the discharge be so profuse as to create alarm for the safety of the patient, she should be freely exposed to cold air, and a lump of ice applied within the vagina.

To diminish the general irritation that often prevails in the passive forms of uterine hæmorrhagy, opium may be advantageously given. Five drops of tinct. opii, or a drachm of the tincture of hyoscyamus, may, with this view, be added to any of the saline or astringent draughts already recommended.

Married women frequently suffer from profuse menstruation, recurring every three weeks, which, besides weakening the frame, prevents, in many instances, conception. To correct this propensity of the uterus, nothing is so effectual as cold bathing of the hips and loins, night and morning, continued steadily for many months.

LEUCORRHŒA.

An increased secretion of mucus from the vagina constitutes leucorrhœa, or fluor albus; a very frequent, troublesome, and obstinate complaint. In several respects its pathology is associated with that of menorrhagia. It frequently accompanies profuse menstruation, and is one of the most constant attendants upon the natural decline of the menstrual discharge. It appears also in many cases to depend upon the same causes. Slight symptoms of feverish excitement attend it, or sometimes the more obvious marks of *plethora*. Occasionally, but I believe more rarely, it is connected with general weakness, as indicated by paleness of the skin, a weak pulse, and œdema. Lastly, it depends in certain cases on *local* irritations.

The treatment of leucorrhœa must of course vary with the character of the accompanying symptoms, but will readily be understood from the remarks already offered on the management of menorrhagia. Where the system is heated, antimonial diaphoretics, laxatives, and cupping-glasses to the loins, are indicated; the cold bath, tonics, and astringent injections, when the constitution is debilitated. Injections of the argentum nitratum (of the strength of three grains to the ounce) have lately been recommended by Dr. Jewel. In some cases the checking of the discharge might possibly be prejudicial. In many this fear is groundless, the disease continuing, but without injury to the general health, notwithstanding every effort.

CHAP. V.

HYSTERIA.

Marks of an hysterical Habit. Phenomena of the hysterical Paroxysm. Prognosis. Diagnosis. Pathology. Dependence of Hysteria on the State of the nervous System—of the uterine Functions—of the Stomach and Bowels. Treatment. Influence of Antispasmodics.

Often as I have had occasion to animadvert on the inconveniences and difficulties of nosological arrangements, in no instance, perhaps, are they more strikingly displayed than in that before us. Hysteria, indeed, has in all ages proved a fertile theme of nosological controversy. So various are its symptoms, so widely extended and so obscure its pathological relations, that the very assigning to it a situation, presupposes some theoretical notions concerning its nature, which have been and may still be disputed. I have here placed it among the diseases of the uterine system, following, in this respect, the opinions (or perhaps what some might call the *prejudices*) of an early period of medical science. The objections, however, which may be urged against this arrangement will be of little moment, if the student derive his notions of the disease from the pathological views which will be taken of it, rather than from the division of the work in which they happen to be discussed.

The hysterical habit.—The symptoms of hysteria may be subdivided into such as mark the hysterical habit, or constitute the hysterical paroxysm. The hysterical habit is characterized by great irritability both of body and mind. There occur sudden fits of laughing and crying, without any cause, or from causes wholly inadequate; the patient crying where she ought to laugh, and laughing where she might be expected to cry. There is a great dejection of spirits, a causeless dread of evil, a hurried manner, and a variable temper. With this morbid condition of the mind are associated many symptoms of bodily derangement—dyspepsia in all its shapes, the *globus hystericus*, or sensation of a ball rolling about in the stomach and gradually ascending to the throat, costive bowels, fits of difficult breathing, palpitations, a peculiar kind of nervous headache commonly called the *clavus hystericus*, and a copious flow of *limpid* urine.

Character of hysterical convulsion.—These symptoms afford, of themselves, sufficient evidence of the hysterical disposition; but in all severe cases the more striking characters of the disease are developed by the occurrence of paroxysms of *convulsion*. These are often very violent, evincing a force that overcomes all opposition. The trunk of the body is writhed to and fro, and the limbs are variously agitated. The fists are closed so firmly that it is difficult or even impossible to open the fingers. A frequent symptom is that of beating with the closed fist upon the breast violently and repeatedly. There is an involuntary utterance of shrieks and screams, with fits of laughing and crying, sometimes accompanied with, or succeeded by, an obstinate and distressing hiccup. In this state the patient continues for a longer or shorter time; often for twenty-four hours, though of course with occasional remissions.

More or less suddenly, and frequently with repeated sighing and sobbing, the patient returns to the exercise of sense and motion, generally without any distinct recollection of the circumstances of the fit. For some time afterwards she appears quite spent, and lies stupid, and careless of what is going on around her.

Diagnosis.—Formidable as these symptoms appear to the bystanders, they are attended with no real danger, at least for the time. Where the hysterical habit, indeed, is very strong, the fits gradually acquire more and more of an *epileptic* character, until at length (though probably not until after two or three years) the disease merges altogether in epilepsy. It cannot therefore surprise us, that in many cases the diagnosis of epilepsy and hysteria should be a matter of considerable difficulty. I believe it to be often impossible. The symptoms which are chiefly to guide us, are the globus, the variable mind, the flow of limpid urine, and the degree of coma subsequent to the convulsive paroxysm. But it is not only from epilepsy that hysteria is difficultly distinguished. There is hardly a disease in the whole nosology, of which it has not imitated the symptoms, and that with surprising accuracy. I have seen hysteria accompanied by constant vomiting; by a complete ischuria renalis; by the most obstinate colic; by all the symptoms of genuine asthma. I have even seen it assume, with most deceitful accuracy, the symptoms of apoplexy. Authors have described in like manner an hysterical jaundice, an hysterical mania, an hysterical diabetes. The diagnosis of these and of all other forms of hysterical affection will put to the test the tact and skill of the physician; but I doubt if any distinct rules can be laid down for his guidance. Yet it is of the utmost importance, not only as regards the treatment, but also with reference to *prognosis*. It is hardly necessary to apprize the student, that the danger in these cases is to be estimated, not from the violence of the leading symptoms, but the character of the *habit* in which they occur.

Causes of Hysteria.—Such are the phenomena of the *hysteric passion*. Its pathology is complicated and difficult; for in attempting to investigate its causes we must direct our attention *equally* to the nervous system generally, to the uterine functions, and to the state of the stomach and bowels. It is only by taking this enlarged view of the subject that we can arrive at any adequate explanation of its varied appearances, or reconcile the conflicting opinions of authors of acknowledged merit.

1. Hysteria is scarcely ever observed except in females whose nervous system is peculiarly irritable. This is by no means a necessary concomitant of a *delicate* frame of body. It frequently exists along with a full *plethoric* habit, and is brought on by a life of dissipation and inactivity, late hours, and heated rooms. At other times it is manifestly connected with a want of tone in the general system. Hysteric symptoms, therefore, occasionally accompany the convalescence from acute diseases, and co-exist with severe diarrhœa, and such chronic ailments as produce much constitutional debility. In this *irritable* state of the nervous system (whether dependent on plethora or weakness) the hysteric paroxysm, once excited, is often renewed by very slight causes, which under other circumstances would have produced no effect, such as mental emotion, irritation, or fatigue. In fact, it becomes by habit riveted in the body.

2. The connection of hysteria with morbid states of the uterine system has given a name to the disease, and it is undoubtedly an important consideration. This may be illustrated

in a variety of ways. Cases of hysteria in males have been recorded, but upon no very good authority. The complaint is in truth *peculiar* to the female sex. It commences at the age of puberty, and seldom occurs after the thirtieth year of life. Its attack frequently coincides with the menstrual period. It chiefly prevails among unmarried, or barren women. It accompanies chlorosis, amenorrhœa, menorrhagia, and all irregularities of the menstrual function.

3. Hysteria is intimately connected with disordered states of the stomach and bowels. The nervous system may be irritable, the menstrual discharge may be obstructed, but it often requires a fit of dyspepsia, or a very costive state of the bowels, to develop the hysteric paroxysm. Of late much importance has been attached to this feature in the pathology of hysteria, and by some it has even been supposed to supersede every other. This confined view of the subject, however, is neither consonant to general pathology, nor is it borne out by the results of experience. A practitioner who trusts to purgatives alone will *sometimes* succeed,—but he will occasionally fail, where another of more enlarged views is happily successful. In the treatment of hysteria, all the views which I have now taken of the disease merit an equal share of attention.

Treatment.—The first object is the relief of the patient during the actual paroxysm of convulsion. Little, however, can be done at this time. Where the attack is very severe and long-protracted, the patient young and plethoric, and the pulse full, blood may safely be taken from the arm; but we must not anticipate much benefit from the measure even under these favourable circumstances. Its good effects are for the most part only slight and temporary. Cold water to the face, volatile alkali to the nose, and æther to the temples, are often equally effectual. Turpentine or assafœtida glysters have sometimes succeeded in cutting short the fit. The power of swallowing being usually lost, or, at any rate, the teeth firmly clenched, the attempt to give medicines internally during the fit is commonly fruitless. This must be reserved for the interval of the paroxysms, at which time they may be resorted to with a fair prospect of advantage. The *indications* of cure are to allay the excitability of the nervous system, and to improve digestion. The state of the uterine functions may in some cases also become an object of attention.

In full plethoric habits, the *irritable* state of the whole frame is best combated by purging, low diet, and regular exercise. Purgatives have been found very useful in the practice of Dr. Hamilton, who has noticed that in this disease the bowels are often so *torpid* as to render necessary full and frequently repeated doses.* He observes, that the first purgatives may perhaps appear to aggravate the symptoms, but a perseverance in their use removes a mass of accumulated fæces, and with it the general irritation. The hysteric paroxysm being very frequently brought on by sordes in the stomach generating wind and acid, a gentle emetic is indicated, and may often be given with the best effect.

In languid habits *tonics* are called for,—myrrh, steel, and bark; a course of mineral waters; regular hours, cold bathing, horse exercise, and a generous diet. In every state of body in which hysterical symptoms arise, advantage is derived from the use of the fœtid gum-resins, assafœtida, galbanum, and sagapenum; as also from castor, musk, camphor, valerian, æther, ammonia, and the essential oils of amber and cajeput. The utility of these medicines in the slighter forms of convulsive disease is unquestionable, and has procured for them the generic appellation of *antispasmodics*. The mode of their operation is but little understood. They are all stimulating or heating drugs, possessed of strong sensible qualities. They may be exhibited in various forms of combination, of which the following may be taken as a specimen:—

℞ Misturæ camphoræ, ℥j.
Spt. ammoniæ fœtidi, ʒj.
Syrupi croci, ʒj. Misce.
Fiat haustus, urgente spasmo sumendus.

The pilulæ galbani compositæ in the dose of five grains three times a day is an approved and elegant formula.

Dyspeptic symptoms constitute so essential a part of the hysteric character, that the physician must naturally direct much of his attention to them. Flatulence so generally prevails, that the aromatic distilled waters, which possess in so eminent a degree *carminative* qualities, will be found very serviceable. The following draught may be recommended:—

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* See Hamilton on Purgative Medicines, page 131.

℞ Aq. menthæ piperitæ, ʒx.
Pulveris rhei, gr. v.
——— valerianæ, gr. x.
Ammoniæ subcarbonatis, gr. iij.
Syrupi zingiberis, ʒj. Misce.
Fiat haustus bis indies sumendus.

The remarks already offered on the treatment of primary dyspepsia preclude the necessity of my entering more at large on this branch of the medical treatment of hysteria.

I have only further to add, that some management of the mind is also necessary. A woman can often by a little exertion resist the tendency to the fit, and by well-timed firmness on the part of the practitioner, the same desirable object may sometimes be obtained.

CHAP. VI.

OVARIAL DROPSY.

Varieties of Ovarial disease. Phenomena of Dropsical Ovary. Diagnosis. Prognosis. Appearances on Dissection. Causes. Treatment.

Morbid anatomy has proved that the ovaria are liable to several kinds of disease. They have been found greatly enlarged, and converted into a firm white mass, feeling like cartilage, more or less intersected with membranous septa. At other times, one or both ovaria appear ossified. Still more frequently this organ is converted into a fatty substance, enclosing teeth and hair, the whole being surrounded by a firm membrane. The theory of the production of these latter tumours is very obscure, and has given rise to some curious speculations.* But these subjects can hardly be considered proper for investigation in this work. The symptoms which attend such diseased conditions of the ovarium are quite unknown, and can never therefore become an object of practice. I allude to them only in so far as they suggest the probability of their being *functional* diseases of the ovarium, of which these disorganizations are the results. Pathologists have long entertained the suspicion that such affections exist, and certain diseases of the uterine system (hysteria in particular) have been by some ascribed to this cause. The opinion can never, from the very nature of the subject, be viewed except as a plausible conjecture.

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* See Baillie's Morbid Anatomy, page 410.

Omitting then these topics, as being too imperfectly known to admit of discussion, I proceed to the consideration of the only diseased state of the ovarium which is ever likely to become an object of *practical* interest,—I mean that of dropsy. The symptoms that mark the early stage of dropsical ovary are very obscure, nor can the existence of the disease be ascertained, until it has made such a progress as to have formed a swelling at the lower part of the belly. This swelling is attended with a sense of *weight* in that part, and according as the right or left ovarium is affected, the tumour and hardness are perceptible in one or other groin. When the disease is somewhat more advanced, fluctuation may generally be felt, sometimes nearly as distinct as in common ascites, but more usually obscure. Probably this depends on the degree of tenacity in the contained fluid.

Diagnosis.—The great mark of distinction between ovarial dropsy and common ascites, is to be found in the little disturbance which the former occasions in the constitution. The appetite remains good. There is no thirst, and the urine continues to flow as in health. Neither weakness nor hectic are produced, at least in the early stages of the complaint, and the menses are unaffected. So little does the disease influence the general health, that instances are on record of a woman becoming pregnant and bearing a child to the full time, while one ovary was enormously distended by dropsy. When the disease has reached a certain point, it produces many very unpleasant symptoms from its mere bulk,—difficult breathing, amounting often to what is called orthopnœa, dyspepsia, costive bowels, swelled legs, with cramps, and a varicose state of the veins of the leg.

Prognosis.—The progress of dropsical ovarium is subject to great variety. Instances have been met with where it proceeded rapidly, and proved fatal in one or two years. Much more commonly its advances are very slow, and life can often be preserved under it with tolerable comfort for many years. I knew an elderly woman who had laboured under ovarial dropsy for thirty years. She died without having ever been tapped, upon the very morning when the operation of tapping was to have been performed. Very few cases are recorded of a cure of this disease, either by the efforts of art or nature. It would appear as if the absorbents of the ovarium were hardly capable of being excited to the degree of action necessary for the removal of the fluid. In one instance only have I ever known such absorption to occur, and the relief prove permanent. In most instances the ovarium again fills, and the patient ultimately dies. Death takes place sometimes from *exhaustion*, and sometimes from inflammation supervening on the sac in consequence of tapping.

Morbid anatomy.—On dissection, the ovarium is found converted into a capsule, often of enormous size, and of variable thickness, adhering in most cases, but not universally, to the peritonæum lining the abdominal parietes. It is sometimes so large as to occupy almost the whole cavity of the abdomen. In other cases, instead of a single bag, the ovary is converted into a congeries of cysts, either separate, or communicating with each other by considerable openings, and containing at times fluids of different kinds. Occasionally tumours of a firm texture are found attached to the inner surface of the capsule.

The fluid of a dropsical ovary is almost always mucilaginous, and of a bluish or sometimes chocolate colour. Without experience in the disease, it is difficult to give credit to the statements which have been published of the *quantities* of fluid observed in different cases. In the Philosophical Transactions for the year 1784, a case is related of a woman who, in the course of twenty-five years, was tapped eighty times; and from whom six thousand six hundred and thirty-one pints of fluid were abstracted. On the 9th January, 1822, I drew off, after death, from a single thin membranous cyst, eighty-two pints. I have heard of a hundred and twenty pints having been drawn off at once during life. The rapidity with which the fluid accumulates varies in different cases. In the Medical Communications* will be found an interesting case of dropsy of the ovarium, in which nine hundred and sixty-four pints were discharged in the course of one year, at fourteen tappings, making, on an average, a daily secretion of nearly two pints and a half. The disease lasted five years, during which time the patient was tapped forty-one times, and two thousand seven hundred and eighty-six pints of fluid were taken from her. In general it will be found, that when twenty-five or thirty pints are accumulated in the sac, the uneasiness from distension becomes so great that paracentesis abdominis is rendered necessary.

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* Vol. ii. page 123.

Causes.—Of the causes of dropsical ovary very little is known. It does not appear that impregnation gives any peculiar disposition to it. Among the recorded cases many occurred among unmarried women. It has commenced as early as the twentieth year of life; but it is most frequent after thirty. Some cases may possibly have their origin in chronic *inflammation* of the ovarium. This opinion is supported by the fact, that in several instances the disease has been attributed by the patient to a contusion or fall.

Treatment.—Little need be said on the subject of treatment. Mercury has been tried and found to be useless. The operation of tapping affords the only effectual relief which it is in our power to hold out. A *radical* cure of the disease has been attempted by making a large opening in the cyst, with the view of inducing inflammation and adhesion, as in the case of hydrocele. Very powerful reasons, however, have been urged against this operation by Dr. W. Hunter,* and it appears in every respect unadvisable.

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* See Medical Observations and Inquiries, vol. ii. page 41.

CLASS IX.

CHRONIC CONSTITUTIONAL DISEASES.

CHAP. I.

SCROPHULA.

General outline of the Pathology of Scrophula. Marks of Scrophula in the healthy conditions of the body. Characters of Scrophulous disease. Structures affected by Scrophula. Causes of Scrophula. Hereditary predisposition. Acquired Scrophulous Diathesis. Causes leading to the development of Scrophulous disease. Principles of treatment. Importance of pure air. Sea bathing. Nourishing diet. Influence of tonic, alkaline, and other medicines. Treatment of Scrophulous inflammation of the Lymphatic Glands.

THE pathology of scrophula is altogether *sui generis*, not assimilating with that of any other known disease. It is moreover a subject of very great difficulty. A full investigation of it presupposes an acquaintance with almost all forms of disease, and of the modifications of which they are susceptible. Its extent is unbounded. To the physician and the surgeon it is equally an object of attention. Whether we regard symptoms, causes, or treatment,—whether we view diseases as external or internal, acute or chronic, a knowledge of the several doctrines connected with scrophula is indispensable to their complete elucidation. It may be considered, in fact, as the most important of those great links which bind together the infinitely varied ramifications of medical inquiry.

Interesting as scrophula is to the *general* pathologist, it cannot be denied that it is more especially essential in the inquiries of the surgeon. The principal forms of scrophulous disease being external, fall under his cognizance, and from them the chief characters of the affection are necessarily derived. These considerations will point out how little calculated is this investigation for a work so brief in its plan, and so confined in its design, as the present. We may even go further, and say, that a subject of such extent and difficulty is ill suited for elementary works generally, and that the student should at first content himself with a superficial examination of it. Such at least is all that will here be attempted.

Marks of the scrophulous habit.—Scrophula is usually designated by nosologists as a morbid state of the *lymphatic glandular* system; but our notions of the affection would be very imperfect were we to view it only in this light. On the other hand, some have altogether denied to scrophula the name of a *disease*, and have considered it only as a peculiar habit of body giving a *predisposition* to morbid action. Without waiting to discuss a point which resolves itself into a mere dispute about words, I proceed to state, that independent of the unequivocal characters of scrophulous *disease*, there are marks by which, in the very healthiest conditions of the body, the scrophulous disposition may (not indeed with certainty, but with a reasonable share of probability) be distinguished. Of this kind are, a fair, thin, and smooth skin, in which the blood-vessels are particularly apparent; light and soft hair; large blue eyes and a blooming complexion; the upper lip, columna nasi, and lower part of the nostril, more tumid than natural; fulness and turgescence of the veins; long and slender fingers; and lastly, a narrow chest, and prominent shoulders. The scrophulous habit is thus characterized by a general laxity of muscular fibre, and delicacy of organization throughout the body. The mental faculties are usually developed early. The intellect is acute and lively.

Characters of scrophulous disease.—The scrophulous diathesis, however, can never be decisively proved by the concurrence even of all these appearances. There must be superadded to them certain *morbid* phenomena, before its presence in the system can confidently be pronounced; and these will seldom fail to exhibit themselves, for scrophula is marked by a peculiar disposition to morbid action in the body. Among the earliest, the most frequent, and most characteristic symptoms of the disease, are swellings of the absorbent glands, particularly those of the neck. This, too, is the mildest form under which scrophula ever appears. Such tumours sometimes continue for a long time, neither advancing nor receding, unattended by pain or any constitutional disturbance. Sometimes they subside spontaneously, but more frequently suppuration of an imperfect kind gradually takes place in them, followed by open ulceration. The ulcers heal slowly, leaving ragged and unsightly scars, and are succeeded by other tumours, which run a similar course. In this manner the disease is often kept up for a series of years, until at length the constitution strengthening, either throws it off, or it appears under some of its more severe and dangerous forms.

An opinion has been entertained, that in scrophula a *morbid matter* is generated which has a *specific* influence on the lymphatic system; but there are no sufficient grounds for this notion. What the circumstances, however, are, which in a scrophulous habit render the lymphatic system so peculiarly liable to inflammation we know not. Scrophula affects equally many other structures, and in all cases the inflammation which is excited has the same general character.* It is of a chronic, languid kind. The scrophulous abscess is distinguished by its jagged and uneven sides The pus which it contains, instead of having a bland, uniform, cream-like appearance, is thin, or *ichorous*, and mixed with curdy flakes. The ulcer by which it is succeeded has a smooth, obtuse, and overlapping margin. The surface of the sore is of a light red colour, and the granulations are flabby and indistinct. For a great length of time, in spite of every care, it remains indolent, neither increasing nor diminishing in size.

Structures affected by Scrophula.—There is hardly an organ or tissue of the body which can be considered free from the occasional ravages of scrophula. It appears sometimes in the head, in the form of small tumours, attached to the membranes, or imbedded in the substance of the brain or cerebellum, and laying the foundation of hydrocephalus. In the lungs scrophula exhibits itself in the form of tubercles, scattered through their substance, modifying the character of inflammation in that organ, and producing genuine consumption. Scrophula, in like manner, attacks in their turn all the viscera of the abdomen, the liver, the peritonæum, the kidney, the ovaria, and above all the mesenteric glands.

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* The gradual expansion of the opinions of pathologists regarding the nature of scrophula, will be found ably detailed in an article in the Edinburgh Medical and Surgical Journal, vol. xviii. p. 121.

Of the external parts of the body liable to scrophulous disease (independent of the lymphatic system) may be particularly specified, the tarsi, the thyroid gland, the mamma, the testicle, and lastly, the bones and other structures connected with joints. These varied forms of scrophulous disease constitute a very large proportion of the objects of a surgeon's attention. Scrophula predisposes to infantile remitting fever, to chorea, and to several other kinds of *constitutional* ailment. It would be desirable, certainly, to ascertain, and strictly according with the design of this work, to point out the unvarying, or *pathognomonic* characters of scrophulous complaints generally, and thus to limit the application of a term which is now perhaps employed too extensively. The task, however, is a very difficult one, and in the present state of the science hardly to be effected. I pass on, therefore, to the consideration of the *causes* of scrophula, a branch of the inquiry involving many interesting but doubtful points.

Causes.—All periods of life are liable to scrophulous disease, but the tendency to it is certainly greatest in childhood, and again when the growth of the body is completed. If a person, most obviously scrophulous, passes his thirtieth year, he may then, in a great measure, consider himself secure from its ravages. Age has a singular power in modifying the liability which particular structures have to this disease. In early life the lymphatic glands, the tarsi, and the joints, are those which chiefly suffer. After puberty the lungs are principally affected. In advanced life the disease, when it does occur, has a tendency to disorganize the abdominal viscera,—the liver, kidney, and prostate gland.

Hereditary Scrophula.—Much discussion has arisen regarding the propriety of calling scrophula an *hereditary* complaint; but the general observation of mankind has decided this question. It is not contended, that all the children of scrophulous parents are *necessarily* scrophulous, that the scrophulous taint can never be eradicated from a family, or that the disease is not occasionally generated in persons whose parents were free from any suspicion of it. The opinion must be received with limitations. Scrophula is hereditary as far as any disease can be so, as far as any kind of temperament or constitutional peculiarity can descend from parents to their offspring. Children of scrophulous parents undoubtedly often continue through their whole lives entirely free from the disease; but the spirit of the doctrine is this:—of two families of children, the one born of scrophulous, the other of healthy parents, the probability is strongly in favour of the disease breaking out in the former, rather than in the latter.

Acquired Scrophula.—That the scrophulous diathesis may be *acquired*, is a point which no one, I presume, would venture to dispute. The very notion of hereditary transmission presupposes some one in whom the morbid phenomena primarily appeared. The same causes which, operating in a minor degree, lead to scrophulous disease in those hereditarily predisposed, will, in a higher degree, *generate* it. It appears, indeed, to be satisfactorily ascertained, that no purity or strength of original constitution will exempt from the ravages of scrophula those who have been long and repeatedly exposed to its exciting causes. In considering what the circumstances are, which lead to the development of a scrophulous diathesis, we should direct our attention principally to the following;—climate, town air, diet, mode of life, and lastly, previous disease.

1. The influence of climate is immense, and may be estimated by the following facts. In the East and West Indies scrophula is hardly known, but when the natives of either are brought into this or any European country, they suffer from it severely. This was strikingly exemplified in 1816, when one of the West Indian regiments was stationed at Gibraltar. The prevalence of scrophula is directly proportioned to the coldness, or, more properly, to the *variableness* of the climate. Scrophulous affections are principally met with in all countries during the winter months. They rapidly improve, or disappear altogether, on the approach of summer; and this effect of warm weather upon scrophulous ulcers is important in *diagnosis* as well as in practice.

2. Among the causes of scrophula, the close confined air of a town appears to merit especial mention. The complaint is infinitely more common among the inhabitants of a town, than among those of a corresponding class of society breathing the pure air of the country. It is notorious, that the population of our large manufacturing towns (Manchester for instance), pent up during the day in cotton-mills, and inhaling a most unwholesome atmosphere, are of all others most afflicted with it.

3. Certain modes of life contribute also in no small degree to the development of scrophula,—confined habitations, want of cleanliness, sedentary occupations, irregular habits; but, above all, deficient or unwholesome diet. They concur in reducing the tone of the system below that healthy standard, which is the surest preservative, not only against the attacks of scrophula, but of every other disorder. The extensive influence of debilitating causes, lastly, is demonstrated by the prevalence of scrophulous affections subsequent to small-pox, measles, hooping-cough, and other diseases which most unequivocally impair the energies of the constitution. Of late years, attempts have been made to connect the scrophulous diathesis in a peculiar manner with *primary* derangement of the digestive functions, but no sufficient reasons have been adduced in support of this opinion. It appears to be founded on very imperfect views of the mutual influence of the different parts of the animal economy upon each other.

Treatment of Scrophula.—These pathological considerations lead directly to practice. It is obvious, that the *prevention* of a disease, and in a great degree also the principles of treatment when it has broken out, must depend on a knowledge of its causes. The time is past when direct or *specific* remedies for the scrophulous diathesis could be proposed, with any prospect of obtaining the confidence of professional men. All that is now attempted is to avoid the obvious exciting causes, and to place the system in that state in which it may best resist the operation of such as are more obscure, or altogether beyond our control.

Climate cannot, except in a few instances, be changed; but attention to clothing, more especially the use of flannel, will go far towards obviating many of the injurious effects of that in which we live. The importance of a pure country air, still more the air of the sea-side, has been long and very generally acknowledged. There have been differences of opinion, however, as to the value of *sea-bathing* in scrophula; but it is hardly possible to entertain such now, after the ample experience of its power, which has been afforded since the establishment of the Margate Sea-bathing Infirmary. Some caution is of course necessary in its application. The constitution must have vigour to support the shock of immersion, and the system must be free from fever or latent visceral disease. In some cases, the warm salt-bath may be preferable to the open sea; but there are few, even of the most aggravated forms of the disease, which are not benefited by sea-bathing under judicious management. There is even strong reason to believe, that a perseverance in it for two or three years during the summer months, has materially contributed to assist the constitution in throwing off the disease altogether.

Diet and regimen.—Regular exercise and early hours will of course be enjoined; but attention to diet is, of all measures, perhaps, the most important with a view to the permanent security of the patient. The value of a wholesome nutritious diet in scrophula can hardly be overrated, but the *asthenic* nature of the disease has often led both parents and practitioners to a hurtful extreme. They have overloaded a delicate stomach with full meals of stimulating food, wine, and fermented liquors; and thus, in their attempts to strengthen the system, have brought on the very condition of the stomach and bowels, in which the seeds of scrophulous action are most effectually laid. It should be remembered, that there is no morbid state which is not, in one sense, debilitating, and in which, by parity of reason, the same treatment is not requisite. The diet of a child liable to scrophula, then, should be nourishing, not stimulating, and given only in such quantity, and at such regular intervals, that the stomach may never be *oppressed.*

Medicines.—I would not wish to undervalue the influence of *remedies;* but it requires only a very superficial knowledge of the disease to be convinced, that in comparison with those other means of relief which have been recommended (warm clothing, pure air, cold sea-bathing, and nutritious diet), they are of little avail. Those which chiefly deserve confidence are occasional gentle purgatives containing a small proportion of calomel, followed by the use of bitters and the carbonate of soda, when the functions of the stomach and bowels are impaired; the more powerful tonics, steel, bark, or the mineral acids, when the constitution is much debilitated; and certain mild alteratives, such as the decoction of sarsaparilla, and the liquor potassæ, in states of the system not so well defined. To these a long catalogue of drugs might be added, which have acquired reputation in the hands of different practitioners. Dr. Cullen recommended the coltsfoot, and Dr. Crawford the muriate of baryta. Dr. Storck had equal confidence in hemlock. These remedies, however, have followed the fate of others which preceded them, and are now almost discarded from common use. Iodine is now the favourite remedy, and it is largely employed outwardly and inwardly—outwardly in the several forms of ioduretted fomentation, ointment and lotion: inwardly in the form of tincture. Of the real merits of iodine as a remedy against scrophula, posterity possibly may form a very different judgment from that of cotemporary writers.

It remains only that I advert, briefly, to the treatment of that characteristic form of scrophula, to which the term *king's evil* is specifically appropriated, in which the lymphatic glands of the neck become enlarged, with or without supervening inflammation. Besides the general measures already recommended, and which of course are equally serviceable in this as in every other variety of scrophula, advantage has been derived, where the tumours are indolent, from stimulating or *discutient* remedies, such as lotions and poultices made of sea-water, mercurial plaisters, and friction. When the tumour has advanced so as to form an abscess, and the skin is so far destroyed as to leave an open sore, the case is purely surgical; and for its management under these circumstances I refer to the writers on surgery, who abound in directions for the treatment of scrophulous ulcers.

CHAP. II.

RACHITIS OR RICKETS.

Literary History of this Disease. Symptoms of Rickets. Cretinism. Its supposed Causes. Its dependence on bad Nursing. Pathology. Treatment

It is a singular circumstance, that a disease arising, as we have reason to believe, from causes which must have operated in all ages and countries, should not have attracted attention until a very recent period. That it must have existed previously, can hardly be doubted; and we are reduced, therefore, to the alternative of either imputing great negligence to the early observers in not having noticed it, or bad pathology in having confounded it with scrophula. The first account which we have of rickets was drawn up by Glisson, in conjunction with two other English physicians, in 1650, and it is both copious and accurate. Their inquiries tended to prove that the disease first appeared in the western counties of England about the year 1620, whence it spread over the whole of Europe. A long controversy succeeded on the question of its modern origin. Zeviani and De Haen attempted to trace it in the writings of Hippocrates, but failed.

Rickets is, comparatively speaking, a rare disease. We meet with but few deformed persons in the streets, and there can, I believe, be little doubt that it is now much less frequent than when it first attracted the notice of English physicians. A very short description of it, therefore, will suffice on the present occasion.

Symptoms.—Rickets never appears in children at birth, and very rarely indeed before the ninth month, or after the second year. The advances of the disease are gradual, and at first hardly perceptible. One of the earliest symptoms is an unnatural softness and flaccidity of the flesh. The body emaciates, although the appetite be good, and food perhaps be taken in sufficient quantity. The cheeks are wan and sallow; the abdomen protuberant; the stools unhealthy in their aspect; the urine turbid. Dentition goes on slowly; the teeth which appear are unsound, and speedily become loose and carious. The process of ossification is peculiarly imperfect, and this leads to many of the most characteristic features of the complaint. The fontanelles and sutures are more open than is usual with healthy children of the same age. The head appears large with respect to the body, and the forehead prominent. The ribs flatten at their sides, and the sternum projects into a ridge. The epiphyses of the long bones become spongy, and the joints therefore appear swelled. This is particularly manifest in the wrists, ankles, and knees. If the child had begun to walk, he daily becomes more feeble on his legs; he waddles, and speedily returns to his nurse's arms. As the disease advances the bones are rendered soft, and being unable to resist the weight of the body, or of the muscles inserted into them, are strangely and frightfully distorted. The spine particularly suffers. The dorsal vertebræ are forced out of their places by the weight of the head, and the child becomes hump-backed.

It is frequently remarked, that the evolution of the mental faculties does not correspond with this *stagnation* of the assimilating functions. In many cases, the child learns to talk with surprising rapidity, and enjoys an acuteness of intellect much beyond his age. The same thing is equally observable in *scrophulous* cases. The phenomenon is not, however, of invariable occurrence. In that highest grade of rickets, which occurs in some of the valleys of the Alps and Pyrenees, and which has been called CRETINISM, the mind becomes completely imbecile and fatuous.

Prognosis.—It is seldom that rickets prove fatal. Usually after the lapse of two or three years, the constitution acquires sufficient strength to put a check to its further advances, and at length the general health is thoroughly re-established. Should the distortion of the limbs not have proceeded very far, it will often be remedied in after-life in proportion as the bones lengthen; and it is surprising to see how much nature will sometimes effect in such cases. But where the distortion has been very great, particularly, as Glisson remarks, if the child passes his fifth year without any decided symptoms of improvement, he will continue a miserable object through life. Dissections of those who have died of rickets do not unfold any peculiar affection of the viscera.

Causes.—Some very extraordinary opinions have been entertained regarding the origin and pathology of rachitis. It was at one time supposed to be allied to syphilis; and more lately a pathological connection between scrophula and rickets has been insisted on, hardly supported, however, on better authority. From the circumstance of its frequently appearing among children of the same family, it has been considered as *hereditary*. All the older writers agreed in the belief that the constitution of parents had much to do with the appearance of rickets in their offspring, and the opinion received the high sanction of Dr. Cullen's authority.

There appears little occasion, however, for accusing the *constitution* of parents. Their inattention and neglect are quite sufficient to account for the phenomena. Pathologists are now, I believe, well satisfied that rickets is the disease of bad nursing. The child is kept on a bed instead of being tossed about in the arms. It is confined to a close small and ill-ventilated room, instead of ranging at large in an airy one.

It is scarcely ever carried into the open air. The child's body is neither washed nor rubbed as it should be. When it has arrived at the eighth or ninth month, it is taken from the breast, and crammed with all manner of unwholesome food. That this system of management, persevered in for several months, should end in great constitutional disturbance, can hardly surprise us; and that these are the real efficient causes of rickets will be obvious from this,—that the disease appears only among the lower orders of the people, who cannot afford the time to nurse their children properly, or among those of an upper rank who are put out to nurse, where the same interest cannot be taken in the welfare of the child, as if it were brought up at home.

Pathology of Rickets.—Various conjectures have been offered as to the proximate cause of rachitis. A depraved state of the blood and humours, with a laxity of structure in the solid parts, was the suggestion of the early writers. Dr. Cullen attributed every thing to debility of the digestive organs. A chemical theory in later times has made the disease depend on a deficient formation of the phosphate of lime. The theory of constitutional diseases is necessarily obscure, and nothing appears to be gained by the display of pathological learning which has been made in the case of rickets. Every function of the system languishes. Digestion, assimilation, nutrition, absorption, are equally impaired; and as the whole system is in fault, from causes which operate widely, so must the cure be attempted by measures of general application.

Treatment.—Strict attention to regimen is above all things to be insisted on. Daily washing, cool and fresh air, exercise suited to the age of the patient, and either breast-milk or a nutritious unirritating diet, are to be rigorously enforced. If the system be not exceedingly reduced, cold bathing during the summer months, and tepid bathing in the winter, will conduce essentially to recovery. Frictions are of some use. Bandages I believe to be altogether ineffectual.

Tonic medicines, in moderate quantities and not too long continued, may be exhibited with some advantage. Steel wine is a favourite and useful domestic remedy. The carbonate of iron and calumba in powder, the tartarized iron, or the tincture of calumba with iron, may be substituted:—

℞ Tincturæ calumbæ, ℥j.
——— ferri muriatis, ℥ss. Misce.
Sumat ♏xx ter die ex infuso zingiberis.

Cascarilla and the Peruvian bark, with acid, have been serviceable in many cases. An occasional dose of rhubarb, or of scammony with calomel, prevents the accumulation of sordes in the stomach and bowels, promotes digestion, and thus tends materially to invigorate the general system. In slighter cases it will be sufficient to direct, along with the steel wine and daily cold washing, five grains of hydrarg. cum creta with three or four of rhubarb, to be given every other night at bed-time.

CHAP. III.

CACHEXIA AND SCURVY.

Of Cachexia. Character of the Class Cachexiæ. Of Scurvy. Its Symptoms and Causes. Speculations on its intimate Nature. Treatment. Influence of Antiscorbutics. Of the Cachexia Africana. Of the Beriberi of Ceylon. Its Symptoms, Pathology, and Treatment.

The term cachexia was employed by Dr. Cullen and some other nosologists to express that depraved condition of body which is the result of depressing causes long operating, without fever. Of such a kind are, nourishment deficient in quantity, or of an improper *quality*, want of exercise suitable to the age and circumstances of the individual, irregular hours and modes of life, habits of intemperance, the venereal poison, a long and ill-conducted course of mercury, and lastly, a bad condition of the air. There are the strongest grounds for believing, that the intimate nature of cachexia is a deterioration in the qualities of the blood, a favourite doctrine with the humoral pathologists, in support of which many very powerful arguments might still be adduced.

Several diseases exist, having for their characteristic feature such a depraved or *cachectic* state of the system. Rickets, of which we have already treated, is the principal form of infantile cachexia. In the present chapter, I shall treat of some affections occurring to adults, in which cachexia is manifestly present; and first of scurvy.

SCORBUTUS.

A variety of cutaneous eruptions, supposed to be dependent on a morbid condition of the blood, are familiarly called *scorbutic;* but in strict nosological language, the term scurvy is appropriated to a disease seldom met with except among seamen. It has been designated as one of the great *sea endemics,* and has proved, even up to a late period, the destruction of many a fleet.* Of a disease which I have rarely seen, and can hardly expect to see, I would willingly omit the consideration; but to complete the plan of the work, I shall venture on a very brief sketch of its symptoms, causes, and treatment, abstracted from the essay of most repute on this subject.†

Symptoms.—The scurvy comes on gradually, with lassitude, disinclination to motion, and difficulty of breathing on slight exertion. The face assumes a pale or yellowish hue. The gums swell and bleed upon the slightest friction. They appear soft, spongy, and sometimes livid. The breath is offensive. The skin is dry and rough, or sometimes smooth and shining. It will generally be found covered with livid spots, which coalesce into large blotches (particularly about the legs and thighs), and obviously arise from the effusion of blood. The legs swell, and ultimately the whole body becomes œdematous. The patient complains of a pain in all his bones, with tightness and oppression about the chest. Any sore which may happen to be on the body acquires the peculiar character denominated *scorbutic.* It discharges a fœtid or bloody sanies. The base of the sore is covered with sloughs. Its edges are livid, and lined with a soft bloody fungus that increases rapidly.

In what has been called the second or aggravated stage of the complaint, the patient loses all use of his limbs; the tendons in the hams are contracted, with swelling and pain of the knees and other joints. General emaciation ensues, with a tendency to syncope on the slightest exertion. Hæmorrhages break forth from the nose, ears, and bladder. Diarrhœa supervenes, and the stools are offensive and bloody. The patient either dies dropsical, or exhausted by some sudden effort.

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* The ravages of this disease are finely pictured in the "Account of Lord Anson's Voyage round the World in 1743."

† Treatise on the Scurvy, by Dr. James Lind. 1772.

Causes.—Very ample experience has proved that scurvy arises from deficiency of proper nutriment. It occurs to sailors when living on salt provisions, more especially such as have been long kept, and which, therefore, contain very little nourishing matter. All observations tend further to prove, that the disposition to the disease is greatly augmented by neglect of cleanliness, imperfect ventilation, want of proper exercise, and a cold damp state of the atmosphere.

The whole train of symptoms manifestly points out extreme feebleness of the powers of life, as the leading principle in the pathology of scurvy. Attempts have been made, however, to define more accurately the *seat* of the disease. Dr. Lind is of opinion, that scurvy consists mainly in a weakened and relaxed state of the *solids*. Dr. Cullen, on the other hand, imagines that a putrescent state of the *blood* (the result of its complete impregnation with salt) is the true proximate cause of the disease. How far the latter opinion is correct, it is hardly possible to determine, for we have no authentic accounts of the disease appearing, where salt provisions could fairly be considered as the *sole* agent in its production. Common sense and pathology equally teach us, that in scurvy there is laxity of the solids and putrescency of the fluids, and that in fact every function and structure of the body participate in the general weakness.

Treatment.—Whatever difficulties may be experienced in determining the theory of scurvy, few points in medicine are less susceptible of dispute than its treatment. In fact, scarcely any thing else is requisite than a return to wholesome diet, particularly to the use of fresh vegetables. For this hardly any thing will compensate. The great object of navy surgeons is not to cure, so much as to *prevent* the scurvy; and this is now effected by an admirable system of regulations, in which *diet* and *regimen* are equally looked to. To unfold these is out of the scope of a strictly medical inquiry. It is sufficient to say, that they comprise attention to personal cleanliness, clothing, ventilation, exercise, with the means of avoiding cold and damp. To these may further be added the daily use of what are called *antiscorbutics*. Substances of this class have long and justly enjoyed a reputation in the world as *purifiers* or *sweeteners* of the blood. Those which the experience of the navy has shown to be most deserving of confidence, are lime-juice, preserved fruits, sugar, infusion of malt, spruce beer, and vinegar. The power of lime-juice in preventing and checking scurvy has been proved by the most ample experience, insomuch that this remedy well deserves to be called a *specific*.

Where the disease has made its appearance, and the true antiscorbutics (fresh vegetable and animal food, or, in their stead, lime-juice) cannot be procured, bark, the mineral acids, and the combination of vinegar and nitre, may be tried; but the prospect of success from them is small. Scorbutic ulcers are improved by local applications of an astringent and antiseptic nature; but it is obvious that their cure must mainly depend on the employment of the proper *constitutional* means.

CACHEXIA AFRICANA.

This term has been appropriated to a very singular disease of negroes, met with in the West Indies, but more especially in the island of Trinidad. It is there called *mal d'estomac*, from one of its most remarkable features, an oppressive weakness of the stomach. The other phenomena of the disease, pointing out its truly cachectic character, may be thus described.

After various attacks of intermittent or remittent fever, of dysentery, or pneumonia, by which the health of the individual is manifestly impaired, he becomes pale, and squalid, and unable to take exercise. The feet and legs swell, especially towards evening. There is palpitation, and occasional vomiting. As the complaint advances, these symptoms increase in severity. The stomach rejects all kinds of food and medicine. The most moderate exercise, especially in ascents, occasions a sense of urgent suffocation and even syncope. On one remarkable occasion, witnessed and described by Dr. Ferguson, when the Royal West India Rangers, after a long residence in Trinidad, were marching along the level parade of St. Ann's, Barbadoes, the men dropt and fell out of the ranks by dozens, as if under a murderous fire of musquetry. Their quivering bloodless lips, ghastly looks, and hurried convulsive breathing, presented a striking image of the mortally wounded. By degrees the cellular membrane becomes every where distended with serum, and a peculiar white adipose substance may be observed in its cells, through the distended and almost translucent integuments. Its presence gives to the face and whole body that whitish colour, which is the true pathognomonic symptom of the complaint.

On dissection, this white matter is seen deposited in the cells of the cellular membrane. Serum is accumulated in the ventricles of the brain, and in the serous cavities of the thorax and abdomen. But the most peculiar appearance is a diminution, or rather an abolition, of the muscular substance of the heart. The heart, often enlarged and overloaded with fat, when taken in the hand, yields to the slightest pressure, and its ventricles, like membranous sacs, are easily pressed together.

Dr. M'Cabe, to whose treatise* I am indebted for this description of the complaint, attributes it to the frequent changes of temperature, and the extreme moisture of the air, which distinguish the climate of Trinidad. To these sources of the disease must be added frequent intemperance. Dr. Ferguson ascribes it to the gradual action of a malaria on the human constitution. It is very common on the swampy banks of the great rivers of Guiana, and in the marshy districts of Trinidad at some distance from the sea coast. The soldiers of the black regiments stationed in Trinidad are its principal victims.

The proximate cause of this disease is doubtless a cachectic state of the blood. Imperfectly formed, and wanting its natural proportion of red globules, it communicates neither energy nor density to the muscular fibre. The treatment must of course consist in change of climate, and in the exhibition of nourishing food, and tonic medicines.

BERIBERI OF CEYLON.

The disease known by this name is chiefly met with in Ceylon, and the neighbouring districts on the Malabar coast. The term beriberi is of Cingalese origin, and indicates one of the great features of the complaint, extreme weakness. The disease has for its principal symptoms an enfeebled or paralytic state of the lower limbs. The patient staggers in his walk, in a manner not unlike the gait of a sheep. This is succeeded by an œdematous swelling of the extremities, with oppressed breathing, and the bloated leucophlegmatic countenance of hydrothorax. In severe cases, death has been known to take place in a very short time. In general, however, the disease continues for three weeks or a month. Death is usually preceded by a period of great suffering. Recovery from beriberi is often witnessed; and, upon the whole, the danger attending it is less than might have been anticipated from the concurrence of such formidable symptoms as palsy, dyspnœa, and dropsy.

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* Dissertatio Medica Inauguralis de Sanitate et vi animi inter Tropicos. Edin. 1819.

Dissections have hitherto thrown no light on the nature of the disease. Effusion into the cavities of the pleura and pericardium has been observed, and the lungs have been found œdematous.

Nothing certain is known regarding the remote cause of beriberi. It has been ascribed to the combined influence of a moist and marshy atmosphere, impoverished diet, and deficient clothing. Dr. Christie, however, has remarked, that a residence of some months at a station where the disorder prevails is essential to its production. The disease appeared among the soldiers of the 19th Regiment at Trincomalee in 1815, without any adequate exciting cause.* We may presume, therefore, that it depends mainly upon *malaria*. Of the proximate cause of the disease as little is known. Some have considered it of an inflammatory, others as being truly of an *asthenic* nature. The absence of any uniform prominent disorganization entitles us to consider the disorder as one of a cachectic kind, in which the fluids are primarily implicated.

The usual mode of treatment has been by calomel and squills, the system being supported under the consequent ptyalism by cordials and aromatics, brandy, æther, and gin-punch. In a few cases blood-letting has been practised; but a more extended clinical experience is necessary before the value of this plan of treatment can be determined. The general character of the symptoms does not seem to warrant active depletion. The beneficial influence of mercury has been certainly overrated. Dr. Scott states, that patients frequently sink while under the influence of mercury. Active purgatives; squills, and cream of tartar, to encourage the secretions of the kidney; blisters to the chest, and the warm or vapour bath, appear to be the remedies on which reliance should chiefly be placed.

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* Dr. Scott, in "Cyclopædia of Practical Medicine," vol. i. p. 269.

CHAP. IV.

HEMORRHŒA PETECHIALIS.

States of the System in which cutaneous Hæmorrhage takes place. Malignant Fever. Plethora, with Congestion or irregular Distributions of Blood. Exhaustion. Phenomena of chronic cutaneous Hæmorrhage. Prognosis. Treatment.

In several parts of this work allusion has been made to the occurrence of Hæmorrhage from the cutaneous capillaries; and as the pathological doctrines which such an incident involves possess considerable interest, it will be right to bring them before the student in a connected manner. Independent of their more obvious bearings, they will serve to impress upon his mind principles, which, of all others, it appears of importance to inculcate, namely, the *constitutional* disturbance present in a greater or less degree in almost every variety of disease, and the dependence of the same phenomenon upon very opposite states of the general system. I shall first point out the several conditions of the body in which cutaneous hæmorrhage has been observed to occur, and then detail the phenomena and treatment of that affection to which the terms *hæmorrhœa petechialis*, *petechiæ sine febre*, and *purpura hæmorrhagica*, have been commonly applied.

Causes.—1. Purple spots on the skin, constituting petechiæ and vibices, are, in the first place, the result of *febrile action*, generally of a typhoid or malignant character. They occur sometimes at the very onset, sometimes towards the close of the fever. In the former case they often acquire an undue importance in the eyes of the practitioner, who is apt to overlook the febrile state by which they are accompanied. They are in strict nosological language cases of *petechial fever;* but the terms purpura contagiosa, and purpura maligna, have been frequently applied to them. Fevers of this class will commonly be found associated with great disturbance of function in the brain and nervous system, upon which, in all probability, the cutaneous hæmorrhage immediately depends. It is hardly necessary to add, that the occurrence of petechiæ in an early stage of fever is a symptom of urgent danger. It denotes either uncommon malignity in the contagion, or a peculiarly depressed and languid state of the body in which the contagion operates. Many cases of severe petechial fever prove fatal as early as the second or third day. I have had reason to believe that a certain proportion of them are in reality undeveloped small pox. On opening the bodies of those who die of the disease, it will generally be found that the hæmorrhagic tendency displays itself equally in some of the internal organs. I have noticed effusions of blood in the heart and mesentery.

2. An eruption of purple spots, in every respect resembling those which occur in fever, is sometimes met with accompanying plethora; still more decisively in connection with symptoms denoting *congestion* of blood in some of the great organs of the body, or irregular distributions of blood throughout the body generally. It has been observed along with, and probably depending upon, thoracic disease of an obscure kind, marked by dyspnœa and an oppressed pulse, and commonly considered as a state of congestion about the heart and lungs. Dr. Bateman* details the particulars of a case that fell under his own observation, in which the disease appeared in connection with an enlargement of the thyroid gland. I observed it, in one instance, succeeding measles.

Again, chronic cutaneous hæmorrhage has frequently been found associated with *abdominal* disease. It has long been known that morbid states of the spleen are attended with different forms of hæmorrhage, and among others with that from the cutaneous capillaries. Cases not unfrequently occur in which purpura is connected with hepatic obstruction (the result of habitual spirit-drinking), evidenced by the jaundiced hue of the skin and eyes, pain of the side, and dry cough. Some recent observations have led to the belief that purpura occasionally depends on a morbid condition of the villous coat of the intestinal canal. It would be more correct, perhaps, in this and other cases, to consider both the abdominal and cutaneous disease as *effects* of an ulterior but obscure cause influencing the *whole habit of body*.

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* Practical Synopsis of Cutaneous Diseases, page 111.

3. A disposition to petechiæ appears, in the third place, as a consequence of deficient nourishment, and other most unequivocally debilitating causes. It has been met with in children ill-fed and badly nursed, and among persons of all ages who live in close situations, enjoying but little exercise in the open air, whose chief diet is tea, and who are exposed to much fatigue, long watching, and great mental anxiety. It is not uncommon in the last stages of infantile marasmus; and it has been observed in adults exhausted by any severe or protracted illness, especially dropsy.

4. Cutaneous hæmorrhage, lastly, is in some instances altogether *constitutional*;—that is to say, it depends upon a natural inherent weakness of the circulating system. In such habits of body, attacks of petechiæ are *habitual*, whereas in all the cases hitherto alluded to they are *accidental*. They then occur on very slight occasions, and not unfrequently without any apparent cause. Errors in diet, unusual fatigue, or exposure to cold, are sufficient to induce them. In aggravated cases the gentlest pressure on the skin will occasion a purple blotch like that which is left after a severe bruise. In constitutions so disposed, the drawing of a tooth is sometimes followed by alarming hæmorrhage. Instances are even on record of death from such a cause.

Phenomena of cutaneous hæmorrhage.—The first of these states of disease does not require further investigation. The other three constitute the different species of that complaint which received from Dr. Adair, in 1789, the name of hæmorrhœa petechialis. There is the utmost variety both in the manner in which the hæmorrhage commences and ceases, and in its accompanying symptoms. It sometimes occurs suddenly; but more commonly is preceded for a week or two by great lassitude, faintness, and pains of the limbs. In its progress it is attended with extreme debility and depression of spirits, and a pulse generally feeble. After the disease has continued for some time the patient becomes sallow, and much emaciated, and a degree of œdema appears in the lower extremities, which gradually extends to other parts. The effusion of blood commonly commences in the legs. The spots are at first of a bright red colour, but soon become purple, and when about to disappear, change to a brown or yellowish hue. The cuticle covering them is smooth, and not sensibly elevated, except in a few rare cases, which Dr. Willan distinguished by the name of purpura urticans. They vary in size, from the minutest point to that of streaks and large blotches. They are neither itchy nor in any way painful.

Discharges of blood take place at the same time from some of the great mucous surfaces,—from the gums, nostrils, lungs, stomach and bowels, or urethra. These hæmorrhages are often profuse, and not easily restrained. The disease is extremely uncertain in its duration. When the hæmorrhagic diathesis is constitutional, it may continue to harass the patient, more or less, through life. Where it arises from accidental causes, its severity and termination are in some degree under our own control. When the disease ends fatally, it is often by a copious and sudden discharge of blood from some important organ,—the lungs, the stomach, or the uterus.

Treatment.—In the treatment of hæmorrhœa petechialis, no rule of practice can be laid down which shall be universally applicable. We have improved certainly upon the notions of the older physicians, in admitting that cutaneous hæmorrhage does not necessarily preclude the application of the lancet; but further than this it would be unsafe to go. The idea of treating all, or even the majority of cases of this disease by depleting measures, is hardly less blameable than the blind adherence to astringents and stimulants which characterized the practice of an earlier age. A *constitutional* tendency to ecchymosis is best combated by those tonic means which are of slow operation, but of undoubted efficacy,—I mean pure country air, regular exercise, nourishing food, early hours, and such amusements as withdraw the mind from the cares and fatigues of business or study. The use of the mineral acids, bark, and a moderate allowance of wine, will coincide with the general indication. The same plan of treatment is applicable to such *accidental* cases of purpura as arise in debilitated habits, and are accompanied by a weak pulse, a sallow dirty complexion, and a tendency to syncope or œdema. In many of these, wine and beef tea are required, with stimulating remedies in full doses.

No theoretical views of laxity or debility, however, are to prevent our having recourse to a different system of management, when the disease occurs under opposite circumstances. If petechiæ appear in persons already enjoying pure air, and suffering no privation of diet; if they are accompanied by a sharp pulse, a white and loaded tongue, with occasional chills; and if, at the same time, there are fixed internal pains, cough, dyspnœa, or other symptoms indicating the existence of some local visceral congestion, tonic medicines will be ineffectual, if not actually injurious. Depleting measures proportioned to the urgency of the symptoms must here be promptly resorted to. Blood may be taken from the arm, in the first instance, with safety and advantage. Free purging is well suited to these cases. Calomel and jalap in active doses may be liberally given.

The convalescence will generally prove tedious; for the disease is one which denotes, under all circumstances, very deep and extensive disturbance throughout the whole animal œconomy.

CHAP. V.

DIABETES.

Division into the insipid and saccharine Varieties. Symptoms of the true Diabetes Mellitus. Prognosis. Appearances on Dissection. Causes. Conjectures concerning the Nature and Seat of Diabetes. Proposed Plans of Treatment. Influence of Drugs on the Secretion of Diabetic Urine.

THIS singular disease has excited a more than common interest among the pathologists of modern times. The original description of it is to be met with in the writings of Aretæus; but though it has been known from so distant a period, few attempts were made until lately to investigate its nature. That they have not been followed by all the success which might be desired, may be attributed in part to the rarity of the complaint; but much curious information has been collected concerning it, and many ingenious conjectures have been thrown out regarding its remote and proximate causes, which may prove useful to the student. These it is my present object to lay before him in a condensed form. The leading symptoms being an increase in the quantity, and an alteration in the quality of the urine, diabetes has usually been considered as a disease of the kidney; but this is merely a conjecture, into the merits of which we may hereafter inquire. The phenomena which it presents ought, in the first place, to be studied without reference to any peculiar pathological opinion.

An increased flow of urine accompanies several disorders, especially such as are of a convulsive, or *hysterical* character. These, however, are not included under the head of *diabetes.* Nosologists have confined this term to cases in which the increased flow of urine is *permanent*, and with which are associated constitutional symptoms usually designated by the term *cachexia.* Two *species* of diabetes have been described, the *insipidus,* and *mellitus;* and it has long been a question, whether these differ in any *essential* circumstances from each other. Dr. Prout is inclined to believe they do, and recommends, that the term diabetes should in future be restricted to those affections in which the urine is *saccharine.* I shall principally direct my attention to the phenomena of the genuine diabetes mellitus, noticing incidentally the peculiarities of the other variety of the complaint.

Symptoms.—Diabetes makes its approaches very insidiously. The first symptoms usually complained of are lassitude, weakness, a disposition to sweating on slight exertions, and headache. Sometimes a diseased state of the urine advances to a considerable extent, and subsists for some time, without being accompanied by any strongly-marked constitutional disturbance, and occasionally even without attracting the notice of the patient. The most striking symptom of the disease is an increase in the *quantity* of the urine. This varies very much in different cases, and is for the most part a good index of the violence of the disease. The largest quantity which I have seen recorded as having been passed in twenty-four hours is thirty-six pints;* and it is no uncommon thing to find from twenty to thirty pints discharged daily for weeks, or even months together. The average quantity may perhaps be stated at twelve or fifteen pints; and it is a remarkable fact, that in many instances it exceeds the whole amount of ingesta, solid and fluid. The secretion of so much urine is almost necessarily attended with a frequent desire to pass it. The patient is generally compelled to rise three or four times in the night for this purpose.

The urine of diabetes is of a pale straw colour. Its smell is commonly faint and peculiar, sometimes resembling sweet whey or milk. Its taste is, with few exceptions, decidedly saccharine, in a greater or less degree.* Even if this should not be perceptible in the first instance, it may often be detected when the urine is concentrated by evaporation. In many cases the saccharine quality of the urine is occasionally suspended; and this happens both spontaneously, and from the influence of medicine. Of the fact, that sugar is secreted by the kidney in this disease, no doubt can be entertained. It is confirmed by the repeated experiments of chemists in all countries. The quantity of sugar formed is in most instances directly proportioned to the degree of *diuresis*, and may always be estimated by the specific gravity of the urine. We are indebted to Dr. Henry, of Manchester, for the following table, showing the quantity of solid extract in a pint of urine of different specific gravities.

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* See Bardsley's "Medical Reports," page 103.

Specific Gravity of the Urine at 60° compared to Water as 1000.	Quantity of solid Extract in a Wine Pint (in Grains).	Quantity of solid Extract in a Wine Pint (in Ounces, Drachms, Scruples, and Grains).			
		oz.	dr.	scr.	grs.
1020	382.4	0	6	1	2
1025	478.4	0	7	2	18
1030	574.4	1	1	1	14
1035	670.4	1	3	0	10
1040	766.4	1	4	2	6
1045	862.4	1	6	1	2
1050	958.4	1	7	2	18

Healthy urine has a specific gravity of 1012, and contains seven parts in 100 of solid matter.

From this table it appears, that if a patient passes twelve pints of urine in the day, of the specific gravity 1035, he voids in that time above sixteen ounces and a half of solid matter. The quantity, however, is in many cases much greater than this.

Other important symptoms occur in diabetes besides those now specified. The appetite is usually much greater than in health; though digestion is seldom if ever perfect. There is uneasiness therefore in the stomach after meals, with flatulence, acid eructations, and irregular bowels. Thirst is a never-failing source of complaint, and often attracts the notice of the patient before he is sensible of the true nature of his case. The skin is dry, and has a peculiarly rough and parched feel from the total want of perspiration. The gums are often swelled, tender, and red; sometimes ulcerated. The breath has a subacid odour. The tongue is white and foul in the centre, with bright red edges. The mouth is dry and parched, and the taste depraved. The patient will generally be found to complain of some pain or sense of weakness in the loins. Phymosis and excoriations on the penis are frequently noticed. Besides these, there occur in almost all cases symptoms indicating general weakness or exhaustion—such as swelled legs, emaciation, coldness of the feet, severe spasms of the calves of the legs, dyspnœa on the slightest exertion, a sense of weight at the epigastrium, with tendency to syncope, general languor, lassitude, and depression of spirits. Early in the disease the pulse is seldom affected; but in its progress hectic fever supervenes, and the pulse becomes frequent, feeble, and irritable.

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* This remarkable quality of diabetic urine was first noticed in 1684, by Dr. Willis.

Prognosis.—The duration of diabetes is very variable. An instance is recorded where it ran its course, and proved fatal, in five weeks. On the other hand, it has been known to last for several years, and ultimately to wear out the constitution. The prognosis indeed, under all circumstances, is very unfavourable. A few well-authenticated instances of recovery might be quoted; but they are too rare to redeem the disease from the character of danger which it has so long borne. It has proved fatal in three ways; first and most frequently by the supervention of either acute or chronic inflammation in the chest; secondly, by dropsy and exhaustion; while in a few cases the patient has been cut off suddenly. The distinction between the insipid and saccharine forms of diabetes to which I formerly adverted, is chiefly of importance with a view to prognosis. The danger is certainly much greater where the saccharine quality of the urine is thoroughly established.

Morbid Anatomy.—Dissections of those who die of diabetes have been diligently practised; but hitherto they have thrown no light whatever on the nature of the complaint. The lungs are often found diseased. The kidneys in a few cases have exhibited their usual healthy appearances; but commonly they are more or less affected. Their texture is more flaccid than natural, or they are turgid with blood, though seldom enlarged in size. The cellular membrane surrounding the kidneys, that of the abdominal parietes, and of other parts of the body, is frequently found loaded with a gelatinous substance. I have seen the same, in a different form of chronic ailment, lining the inner surface of the bladder; and it appears to be a diseased secretion, occurring generally in worn-out constitutions.

Pathology of Diabetes.—Diabetes is a disease observed in all ranks of society. No employment or profession can be stated as particularly liable to, or exempt from it. It is met with in both sexes, and at various ages; but it chiefly prevails among men, and in the middle or advanced periods of life. It would appear to be more frequent in cold than hot climates. Dyspeptic complaints long continued may perhaps favour the disposition to diabetes; but little or nothing is known regarding its remote or occasional causes. Intemperance, severe evacuations, hard labour, and exposure to cold, have been accused of bringing it on, but I believe without any very adequate reason.

One of the first objects of pathological inquiry is to determine whether the saccharine condition of the urine is a primary feature in the complaint, and if it ever exists independent of increase in its *quantity*. Dr. Prout* is inclined to the opinion that it does, and that the increased flow of urine is referrible to an *irritable* state of the system, which forms part of the disease, and resembles that present in hysteria and other nervous affections. Some of the constitutional symptoms attendant on diabetes are perhaps owing to the vitiated quality of the urine; but the most distressing are doubtless to be referred to that enormous *drainage* from the system, both of fluid and solid matter, which takes place when the disease is severe. Differences of opinion are entertained regarding the origin of the sugar which exists in diabetic urine. Some imagine it to be formed in the stomach, and others in the kidney. Dr. Wollaston has rendered the latter the more probable opinion, by showing (Phil. Trans. 1811), that sugar does not exist in the blood of diabetic patients whose urine is at the same time sweet. Many persons indeed have been inclined to consider the stomach as the *primary* seat of diabetes, and they support the opinion by reference to the thirst and inordinate appetite which attend it. Such symptoms, however, are more probably the result of excessive discharge.

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* Inquiry concerning the deranged Operation of the Urinary Organs, page 65.

A suggestion has been thrown out, that the functions of the lungs are primarily implicated, and that diabetes consists in imperfect *animalization* of the blood, whereby sugar is formed instead of the true *animal* principles. The abettors of this opinion rely for its support, partly on the fact that diabetes is frequently succeeded by unequivocal affections of the lungs, and partly on the appearance of the blood drawn, which in some cases does not coagulate, and in many can be preserved a long time without putrefaction. Dr. Cullen looked upon diabetes as a disease of the kidney, and some later pathologists have revived the notion. Morbid anatomy does not favour it; and I am disposed to think, that in this theory stress is laid on a single symptom, to the neglect of others which equally tend to illustrate the real nature of the disease. No view of diabetes hitherto proposed appears so reasonable as that originally suggested by Galen, who considered it as a disease depending on general constitutional disturbance, and allied pathologically to dropsy. In his days the disorder was known under the names of diarrhœa per urinas, or *hydrops ad matulam*. This indeedis not advancing far in the way of explanation, but it may still be preferable to simpler though less accurate hypotheses.

Treatment.—Where pathology is obscure the principles of treatment are necessarily deficient. To this we may ascribe the very opposite plans which have been devised for the cure of diabetes. The practice in this disorder, in fact, is almost purely empirical; and, considering its great fatality, little else is requisite than a mere enumeration of the several kinds of treatment which have been proposed, and a brief notice of the influence which medicine exerts upon it.

Astringent remedies were early resorted to, more particularly lime water, alum whey, kino, and catechu. On the supposition of diabetes being mainly a disease of debility, bark, chalybeates, and the mineral acids, have been extensively used. In 1776 Dr. Rollo suggested the employment of animal diet, and experience has shown that it possesses an undoubted power of diminishing the *quantity* of urine. It will be found, however, in practice, that this plan of treatment can never be rigidly enforced. Blood-letting has been tried by some practitioners, and has proved serviceable in one or two cases; but it cannot be recommended for general adoption. Cupping from the loins has been practised with the view of diminishing the morbid excitement of the kidney. Opium is the latest, and now most esteemed remedy; but upon this, and upon all other remedies for the cure of diabetes, one remark may suffice. Many drugs exert a *certain* power over the disease, which after a time fails. A blister to the loins will occasionally check, in a remarkable manner, the inordinate secretion of urine. Uva ursi, alum, and opium, will do the same in other cases; but the relief they afford is temporary; and when the influence of the drug goes off, we are still as far removed as ever from the cure of the complaint.

Pathological considerations lead to a doubt, whether a remedy for diabetes, in its confirmed stage, can ever reasonably be expected.

CHAP. VI.

PATHOLOGY OF DROPSY.

Intricacies of this Inquiry. Common Divisions of Dropsy. Pathological Divisions. Local Dropsies. Dropsy from Obstruction. Acute or inflammatory Dropsy. Dropsy of Weakness. Hydropic Diathesis. Appearances on Dissection, Thoracic and Abdominal. Prognosis. Principles of Treatment. Influence of Blood-letting. Purgatives. Diuretics. Tonics. Of the surgical Means of Relief in Dropsy.

Few topics in medicine have received more attention from systematic writers than dropsical effusion. The frequency of the complaint, the very striking influence exerted upon it by medicine, and the marked character of the symptoms, have contributed to obtain for it, in all ages, this share of attention. The subject being one of great extent and difficulty, it is not surprising that the notions concerning it, entertained by the older writers, should have been imperfect. Even with all the assistance which the labours of modern pathologists have afforded, it still continues obscure and incomplete. Their improvements, however, are undoubted; and that the student should be able to appreciate their value, and at the same time form for himself correct notions of the nature of dropsy, he must, in the first instance, take a general survey of its *pathology*. Without this, his views of the disease must necessarily be limited and confused; while, by its help, the details of symptoms, causes, and treatment, in each of the principal varieties of dropsy, are easily comprehended. The *nosological* divisions of dropsies are very necessary in practice, and will hereafter be adverted to, but there are certain *pathological* distinctions among them, which are at least equally important. With these, I shall commence; and to explain them shall, in the first place, direct the attention of the reader to the proximate causes of dropsy, and secondly, to that of the *appearances after death*.

Local Dropsies.—The first distinction to be made among dropsies is, into such as are connected with general constitutional disturbance, and such as are strictly *local* (employing, of course, that term in the qualified sense in which it can alone be properly received in medical disquisitions). Of the latter there are three principal forms,—chronic hydrocephalus, ovarial dropsy, and hydrocele. The two former have been already treated of. The latter is exclusively surgical. They may without impropriety, therefore, be excluded from our present consideration.

Proximate cause of general Dropsy.—When dropsy exists along with constitutional derangement, it is reasonable to suppose that all the functions of the body participate, and doubtless this is a correct view of the case; but a notion has always prevailed, that the absorbent and sanguiferous systems are those which principally suffer. In former times, *diminished absorption* was viewed by pathologists as the leading feature of the complaint; and in the eyes of practitioners, the great principle of treatment was to stimulate the absorbents. More recently the circulating system has chiefly been looked to, and *increased exhalation* has been held up as the proximate cause of dropsy. We are too imperfectly acquainted with the physiology of the *absorbent* system, to determine what share it has in the production of dropsy; but the dependence of this disease on disturbance of the *sanguiferous* system is obvious, and of the first importance in practice. Dropsy is observed in two very opposite conditions of the vascular apparatus; of which the one is, sluggishness in, or actual interruption to, the passage of blood through the *veins*. The other is increased action of the heart, or arterial capillaries, or both. The first of these may be called dropsy of the right side of the heart; the second, dropsy of the left side of the heart; and they require to be separately noticed.

1. *Dropsy from obstruction.*—Dropsical effusion may be traced in many instances most distinctly to mechanical causes interrupting the steady flow of blood through the veins, as where it follows ligatures placed on veins, enlarged absorbent glands pressing on them, or the gravid uterus. This local variety of dropsy depending on accidental causes, and occurring only in the feet and ancles, is usually called œdema. But pathologists ascribe to the same proximate cause some more obscure cases of general dropsy, such as that which accompanies enlarged and tuberculated liver, and that which occasionally occurs in hepatization and other structural diseases of the lungs. In both these cases it is supposed that the venous circulation throughout the body generally is impeded.

2. *Dropsy from vascular excitement.*—Dropsy attended with increase of vascular action is very common, and is either general or local, according as the heart itself, or only the smaller arterial branches, are affected. The morbid action of vessels which gives rise to it, may be either actual inflammation, or high irritation, or congestion. Hydrocele and hydrocephalus may be taken as instances of local dropsies of this kind. Ascites sometimes succeeds chronic inflammation of the peritonæum, and hydrothorax that of the pleura. Various examples might be offered of *general* dropsy, arising from, or intimately connected with, this state of the circulation. The most common are, anasarca from exposure to cold, from the excessive use of spirituous liquors, from oppressed uterine functions (amenorrhœa), and from scarlet fever. In all these cases, the disturbance of the heart's action is functional, and admits of a permanent cure. The principle, however, is perhaps most incontestably displayed in the disposition to dropsy, which comes on in

the course of the several structural diseases of the heart (especially enlargement and valvular disease), when that organ labours exceedingly in its functions.

Acute Dropsy.—To that species of dropsy which comes on *suddenly*, with obvious marks of vascular excitement, pathologists have given the name of acute, active, or inflammatory. The term plethoric dropsy was introduced in 1795 by Dr. Grapengiesser, who appears to have the merit of having first accurately described such a form of dropsy. We might call it with some propriety arterial dropsy, as it is not necessarily accompanied with plethora, nor does it always run a very rapid course. In this kind of dropsy the pulse is for the most part full and active, sometimes hard, wiry, and incompressible. There is commonly also cough and headache, aggravated by a full inspiration. Dr. Blackall * has attached much importance to the coagulability of the urine on exposure to heat, a phenomenon very frequently, but not universally, observed in these cases. Arterial dropsy occurs, for the most part, at an early period of life, and may often be traced to cold. Its attack is sudden, and it occasionally proves fatal by the supervention of apoplectic symptoms.

3. *Dropsy from relaxation.*—There is still however a third proximate cause of dropsy to be investigated; one in which the heart and the different organs and functions of the body mutually participate—*viz*. relaxation or atony of the whole system, and especially of the exhalant vessels. This form of dropsical effusion corresponds with that colliquative sweating, which is the frequent consequence of great or repeated losses of blood. It is very often to be observed, therefore, in the latter stages of chlorosis, diabetes, consumption, and hectic fevers of all kinds. Atonic dropsy occasionally follows flooding, and great and sudden abstractions of blood by the lancet. The dropsy which accompanies dilatation of the heart, without increase of bulk in its parietes, is of the same kind. It is sometimes brought on in the lower ranks of life by the want of proper nourishment, and in all persons it may be induced by a long-continued state of disordered stomach and imperfect digestion. Dropsy from relaxation was a favourite doctrine with the early schools of medicine. They admitted, indeed, of no other

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* See "Observations on the Nature and Cure of Dropsies." By Dr. Blackall, of Exeter. London, 1813.

species, and were at any rate unaware that the doctrine of atony and debility applies only to a small proportion of the cases of genuine idiopathic dropsy which are met with in daily practice. Dropsies of this kind are attended with a weak and languid pulse, night-sweats, cold extremities, and in many cases a strong disposition to erysipelas, petechiæ, and gangrene. They chiefly occur in elderly persons whose constitutions are worn out. They commence imperceptibly, and are not traceable to any obvious cause.

Hydropic diathesis.—It cannot be denied, however, that there is something still imperfect in our analysis of the proximate causes of dropsy. A high degree of arterial action may exist, or the powers of life may be excessively reduced, without dropsy supervening. As under certain circumstances of disease there is a peculiar tendency to hæmorrhage, so in others there is a tendency to dropsical effusion. In what the hydropic diathesis consists, it is impossible to define with strict accuracy. The notion that it is essentially *pressure on venous trunks* is ingenious, and apparently borne out by experiment, but is neither applicable to inflammatory dropsy, nor to that which attends hæmorrhage, or chlorosis. Possibly it may depend on some condition of the nerves; or on some want of *consent* between the functions of the capillaries and those of the great arterial and venous trunks. To pursue these speculations, however, would be useless. The symptoms indicative of an hydropic disposition are,—diminished secretion of urine, thirst, œdema of the feet and ancles, and a peculiar expression of countenance, to which the term *leucophlegmatic* has been applied.

Morbid anatomy.—Having now pointed out the divisions of dropsy founded on the consideration of symptoms, I proceed to such as may be referred to the diversity of appearances observed on dissection. Two sets of morbid appearances present themselves in those who die dropsical;—the one thoracic, the other abdominal; and this furnishes a most useful distinction in practice.

Thoracic appearances.—In the thorax we meet with enlargements of the heart, both *active* and *passive*, diseased valves, deposits of coagulable lymph in the cavities of the heart, more especially in the right auricle (absurdly named *polypi*), adhesions of the heart to the pericardium, ossification of arteries, inflammation of the internal coat of the great arterial trunks, aneurism of the aorta;—or sometimes diseased states of the lungs, such as tubercles, vomicæ, and hepatized induration, with or without disease about the heart and great vessels. Lastly, we find malformations of the chest generally. When dropsy occurs connected with any of these conditions of thoracic disease, it assumes the form of hydrothorax, hydropericardium, œdema of the lungs, anasarca, or their combinations.

Abdominal appearances.—In many cases the thoracic viscera are found without the smallest trace of disease; instead of which we meet with marks of inflammation (acute or chronic) of the peritonæum,—adhesion, thickening, or tuberculated accretion of that membrane;—or we find enlargement and disorganization of the solid viscera; tuberculated liver, swelled spleen, diseased mesenteric glands; the stomach scirrhous, tumours attached to the omentum, thickened and ulcerated intestines. When dropsy occurs complicated with any of these varieties of *abdominal* disease, it appears in the form of ascites, or of anasarca and ascites combined. Abdominal dropsy is much more common than thoracic, in the proportion of about three to one.

Dr. Bright has recently drawn attention to the condition of the *kidneys* in cases of dropsy;* and the following is a brief sketch of the additions to the pathology of dropsy for which we are indebted to that observing physician. A diseased state of the kidneys is sometimes connected with dropsy, not as an adventitious circumstance, but as a leading feature in its pathology. In all or nearly all such cases, the urine is albuminous, and more or less coagulable on the application of heat. The most striking morbid appearance presented by the kidney in these instances is a granulated texture of its cortical part. In extreme cases this shows itself in uneven projections on the surface of the kidney, and that organ is increased in bulk. The other appearances are, a yellow mottled aspect of the kidney, both internally and externally, without increase of bulk, or obvious morbid deposit. In a few cases the kidney appears rough and scabrous externally, and its texture approaches to semi-cartilaginous hardness. These disorganizations of the kidney are, for the most part, unconnected with diseased liver.

Sometimes we have occasion to notice thoracic and abdominal appearances present in the same subject; and lastly, instances are not wanting of dropsy, connected with mere *functional* disturbance of one or more organs, proving fatal, and leaving behind it no trace of morbid structure.

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* Bright's "Report of Medical Cases," 4to. 1827.

Prognosis.—It follows from what has been said, that though a few cases of dropsy are local, partial, temporary, and therefore of no material importance, yet the greater number of them are extremely dangerous. The prognosis in general dropsy indeed should always be most strictly guarded, and for many reasons. It is, as we have seen, connected with states of thoracic and abdominal disorganization, over which we have no control. It indicates great *severity* of disease, and shows that the *whole system* is deeply involved. It is often the strongest mark of a worn-out constitution, and of failure of the *vis vitæ.* In all forms of dropsy there is a remarkable liability to relapse..

The duration of the disease varies with many circumstances which it is impossible to enumerate, but which have all an important influence. There is an acute form of dropsy which has proved fatal in a few weeks, and there are instances on record of persons living for a long series of years labouring under a greater or less degree of it. Ascites is perhaps the most generally fatal of all the forms of dropsy, and certainly that over which medicine exerts the least power. It is hardly necessary to say, how much, in the successful issue of a dropsical case, depends upon bringing it early under medical treatment, before the foundations of health are sapped, and the disease advanced to that point, where, from being one of function, it becomes complicated with structural derangement.

Treatment.—In the treatment of dropsy we are to aim, in the first place, at restoring a due state of the circulating system. Secondly, where this cannot be done, or while the measures for effecting it are in operation, we are to promote the temporary absorption of the effused fluid. Thirdly, where the powers of the system are inadequate either to the one or the other, recourse must be had, when practicable, to surgical aid.

1. The means of relief calculated to attain the first object vary of course with the kind of dropsy present. In the acute, plethoric, or arterial dropsy, we are to lower the tone of the arterial system, and to lessen the impetus of the circulating fluids upon the exhalant capillaries. For this purpose, it is sometimes necessary to have recourse to blood-letting, or to local depletion by cupping, or leeches. At other times this

object may equally be gained by brisk purgatives, especially jalap and cream of tartar; by relaxing diaphoretics, such as nitre and antimony; by the more powerful diuretics, especially colchicum and digitalis. The utility of blood-letting in certain forms of dropsy has been established on the clearest evidence; but it is right to add, that so powerful a remedy is not *lightly* to be resorted to. In all cases of disease not accompanied by fever or inflammation, great caution is required in the management of the lancet. In the case of dropsy this is peculiarly necessary; first, on account of the debility, which, if carried too far, blood-letting produces; and secondly, from its being so often associated with that *passive* enlargement of the heart, which does *not* admit of the detraction of blood. Bleeding in dropsy should never be pushed therefore to such an extent as to endanger the occurrence of syncope.

In dropsy from glandular or other visceral obstruction, the indication of cure is to rouse the action of the absorbents, so as, if possible, to remove not only the effused fluid, but the solid morbid deposits which obstruct the course of the circulation. Of *deobstruent* medicines, the most powerful are mercury and iodine. Those possessed of a more doubtful property are squill and ammoniacum.

When dropsy appears associated with a feeble pulse, and other incontestable evidences of languid circulation, the tone of the system is to be supported by wine and brandy, the infusions of certain acrid herbs, such as the horseradish, by the various bitters and aromatics, and lastly, by bark, steel, and camphor.

2. With the second intention (that of promoting the temporary absorption of effused fluid) recourse is had to medicines which determine to the bowels and kidneys. The cathartics most useful in this view are those called *hydragogue*, in which class are ranked jalap, cream of tartar, elaterium, scammony, and gamboge. It is a remarkable fact, that in almost every case of general dropsy, active purging will do something towards the relief of the patient. It appears in a peculiar manner to excite the absorbent system to action. Of the diuretic medicines employed in dropsy, some are weakening, as digitalis, the acetate of potash, nitre, and colchicum. Others are stimulating, such as the spiritus ætheris nitrosi, the oil of turpentine, squill, and juniper berries. The former are chiefly serviceable in thoracic, the latter in abdominal dropsy.

it is associated with a degree of anasarca, and sometimes also with hydrothorax. The quantity of water collected in the belly is often enormous, amounting in some instances to upwards of a hundred pints. It is curious to observe how little inconvenience this occasions to the viscera among which it floats. The functions of the stomach and bowels are performed in most cases of ascites with tolerable regularity. The disease may occur in either sex, and at any age; but like the other forms of dropsy, it is chiefly to be met with in advanced life.

Causes.—The causes of ascites may be reduced to the following heads. It is, in the first place, a sequel of peritonæal inflammation, both acute and chronic, diffused and circumscribed. This form of ascites is accompanied with tenderness in some part of the abdomen, more especially in the right hypochondrium. It arises, in the second place, from diseased conditions of the solid glandular structures of the abdomen—the liver, spleen, and pancreas. In by far the larger proportion of cases the liver is the organ affected. On dissection it appears enlarged, schirrhous, tuberculated, or studded with hydatids. It is a commonly received opinion, that the dropsy which attends diseased liver is referrible to the difficulty with which the blood is transmitted through the vena portæ, and its consequent stagnation, or congestion in the capillaries. This notion is in some measure confirmed by the enlargement which is always more or less observable at the same time in the superficial veins of the abdomen. Something more, however, is probably necessary to constitute a dropsical tendency. It would be impossible, otherwise, to explain why ascites should be so common an attendant on ulcerated stomach and bowels, and such chronic disorganizations as denote a general *decay* of the whole frame. The constitutional origin of ascites is rendered still more evident by its arising in so many cases from causes exterior to the abdomen, such as produce dropsy generally, more especially structural diseases of the heart.

Treatment.—The treatment of ascites must of course to a certain degree vary with the cause which gives rise to it. When it depends upon organic disease of the abdominal viscera, it is nearly beyond the reach of art. When it occurs along with extensive anasarca, it denotes so great an extent of constitutional disturbance as almost to preclude the hope of permanent recovery. That form of ascites which partakes of

Great advantages are derived from combining these remedies. Where blood-letting is indicated, digitalis and occasional purging are applicable. The best effects have followed the union of digitalis and squills with mercury. There is probably no plan of treatment adapted to such a variety of cases as this. Digitalis may often be given with perfect propriety in combination with aromatics and tonics. Lastly, the powers of diuretic medicines are much heightened by mixture.*

3. The surgical means of relief in dropsy are tapping and scarifications. Of their value, I shall have a fitter opportunity to speak in the next chapter, when treating of the principal varieties of dropsical effusion.

CHAP. VII.

DROPSY OF PARTICULAR CAVITIES.

Ascites. Its Symptoms. Causes. Peculiarities in its Treatment. Hydrothorax. Œdema Pulmonum. Hydropericardium. Remedies peculiarly applicable to Thoracic Dropsy. Phenomena of Anasarca. Its Causes. Peculiarities in its Treatment.

Having explained in the last chapter the pathology of dropsical effusion, I proceed to offer a few observations on the chief varieties of general dropsy which meet us in practice. They are five in number, viz. Ascites, Hydrothorax, Œdema Pulmonum, Hydropericardium, and Anasarca. I shall principally direct my attention to the *symptoms* of these diseases, and to the selection of remedies for their removal.

I. ASCITES.

Dropsy of the peritonæal cavity is readily known by the concurrence of the common symptoms marking the hydropic diathesis with swelling and fluctuation of the belly. Simple as these characters appear, there are occasions in which the diagnosis is difficult. Ascites has been mistaken for dropsical, or otherwise diseased ovarium; and physicians have occasionally erred in their attempts to distinguish it from the tumour of pregnancy. Ascites in a few cases occurs alone, but more frequently it is associated with a degree of anasarca, and sometimes also with hydrothorax. The quantity of water collected in the belly is often enormous, amounting in some instances to upwards of a hundred pints. It is curious to observe how little inconvenience this occasions to the viscera among which it floats. The functions of the stomach and bowels are performed in most cases of ascites with tolerable regularity. The disease may occur in either sex, and at any age; but like the other forms of dropsy, it is chiefly to be met with in advanced life.

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* Formulæ for the employment of diuretic medicines may be found in the Appendix.

Causes.—The causes of ascites may be reduced to the following heads. It is, in the first place, a sequel of peritonæal inflammation, both acute and chronic, diffused and circumscribed. This form of ascites is accompanied with tenderness in some part of the abdomen, more especially in the right hypochondrium. It arises, in the second place, from diseased conditions of the solid glandular structures of the abdomen—the liver, spleen, and pancreas. In by far the larger proportion of cases the liver is the organ affected. On dissection it appears enlarged, schirrhous, tuberculated, or studded with hydatids. It is a commonly received opinion, that the dropsy which attends diseased liver is referrible to the difficulty with which the blood is transmitted through the vena portæ, and its consequent stagnation, or congestion in the capillaries. This notion is in some measure confirmed by the enlargement which is always more or less observable at the same time in the superficial veins of the abdomen. Something more, however, is probably necessary to constitute a dropsical tendency. It would be impossible, otherwise, to explain why ascites should be so common an attendant on ulcerated stomach and bowels, and such chronic disorganizations as denote a general *decay* of the whole frame. The constitutional origin of ascites is rendered still more evident by its arising in so many cases from causes exterior to the abdomen, such as produce dropsy generally, more especially structural diseases of the heart.

Treatment.—The treatment of ascites must of course to a certain degree vary with the cause which gives rise to it. When it depends upon organic disease of the abdominal viscera, it is nearly beyond the reach of art. When it occurs along with extensive anasarca, it denotes so great an extent of constitutional disturbance as almost to preclude the hope of permanent recovery. That form of ascites which partakes of the character of a *local* dropsy, and is connected with inflammatory action in the peritonæal membrane, is the most under our control. The application of leeches, blisters, and fomentations, with the liberal use of mercury and of saline aperients, has in many of these cases succeeded perfectly in removing the complaint. Where our object is merely to afford temporary relief, the best system of treatment consists in the occasional use of hydragogue cathartics, especially jalap with cream of tartar, and elaterium in the dose of half a grain; employing in the intervals such drugs as combine a *deobstruent* with a diuretic quality, such as the following combination of squill, digitalis, and mercury, the operation of which may be promoted by the free use of any simple diluent:—

℞ Pil. hydrarg. gr. iij.
Pulveris scillæ, gr. j.
——— digitalis, gr. j. Misce.
Fiat pilula meridie et vespere sumenda.

When the accumulation of water becomes so great as to interfere with the breathing, or to create distress by distension of the abdominal parietes, recourse must be had to the *paracentesis abdominis.* It is a commonly received opinion, that tapping, once performed, is a complete bar to the permanent recovery of the patient; but this notion is incorrect, and has often proved hurtful by inducing practitioners to delay the operation too long. I am far from wishing to advocate a hasty employment of the trocar, but more danger arises from inordinate distension than from tapping.

II. HYDROTHORAX.

Dropsical accumulation in the cavity of the pleura occurs under two forms; first, idiopathically, as the result of acute or chronic inflammation of the pleura. Under these circumstances, it is almost always confined to one cavity of the chest. Secondly, as the result of some organic disease, abdominal or thoracic (chiefly of the heart, great vessels, or lungs), or in the progress of certain functional diseases attended with great exhaustion. Under these latter circumstances, the effusion usually occurs on both sides of the chest, and is associated with the general symptoms of an hydropic diathesis, and with other forms of dropsical effusion, especially hydropericardium, and anasarca.

The constitutional symptoms of hydrothorax, the sole guides of the physicians of former times in their diagnosis of hydrothorax, are extremely vague and unsatisfactory. The writings of old authors abound with instances of erroneous diagnosis.* This arises from the difficulty of distinguishing the symptoms which depend simply on the presence of water in the chest from those of the organic disease which preceded or occasioned it. Those which Dr. Baillie relied on, and which he considered as generally sufficient for the purpose, are as follows:†—1. Difficulty of breathing, especially in the recumbent posture. 2. The interruption of sleep by alarms and painful dreams. 3. A pulse generally, but not always, irregular. 4. A pallor, or occasionally a purple hue, of the countenance. 5. Scanty urine and œdematous legs. The second of these symptoms belongs to disease of the heart. The remainder are present in other thoracic affections besides hydrothorax; nor are they always to be met with even in that disease.

We must look, therefore, to external signs for a more efficient mode of distinguishing the presence of water in the chest. These are, in all respects, the same as those formerly mentioned (page 230), as indicating the presence of empyema. The sound on percussion of the affected side is dull over an extent of surface proportioned to the quantity of effused serum. The natural murmur of respiration is inaudible in those parts where the lung has given place to watery effusion. When the patient, therefore, is examined in the erect position, the level which the fluid has attained can, in many cases, be accurately determined. Where the effusion is confined to one side, dilatation of the thoracic parietes of that side is often perceptible.

The diagnosis of hydrothorax from empyema, and of the idiopathic or local from the symptomatic or constitutional hydrothorax, can be effected only by attention to the general symptoms, and especially by careful reflection on the order of their succession.

The quantity of fluid collected in the chest is occasionally very great, amounting in some instances to ten or twelve pints. Its colour is usually amber, sometimes inclining to red, from the admixture of blood.

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* See Morgagni, Letter xvi.

† Baillie's "Morbid Anatomy," vol. ii. p. 57. Wardrop's edition.

III. ŒDEMA PULMONUM.

This term is applied to the serous infiltration of the proper cellular texture of the lungs, the obvious effect of which is to compress the air-cells, and thus occasion dyspnœa. Dr. Baillie never saw a well marked example of this affection, but Laennec mentions it as being far from uncommon. The principal facts ascertained with regard to this form of dropsy are the following:—

Anasarca of the lungs frequently accompanies the other and more usual forms of dropsy, and occurs especially as a consequence of disease of the heart. It sometimes takes place a few hours only before death, but in other cases has lasted several weeks, and even months. It is very difficult to ascertain the existence of this disease even by the aid of the stethoscope. The dyspnœa which it occasions is in no respect different from that which accompanies hydrothorax. The natural sonorousness of the chest is somewhat diminished, but the lungs still retain air sufficient to prevent a dull sound on percussion. On applying the stethoscope, a delicate ear can distinguish a sound of the respiration analogous to, but slightly different from, the crepitating sound formerly mentioned (page 236), as indicative of peripneumony.

IV. HYDROPERICARDIUM.

The pericardium is sometimes distended with fluid, the result of acute inflammation; but a chronic dropsy of the pericardium, independent of pericarditis, is rarely met with, except in combination with other evidences of the hydropic diathesis. It is sometimes present, however, in a degree to which other appearances do not correspond. On the 5th February, 1823, I examined the body of a woman, in whom the pericardium was so enormously distended as to contain eighteen ounces of serum, besides an enlarged heart. The effusion into the general cavity of the chest was very inconsiderable. In this case there were no symptoms by which the locality of the effusion could have been foretold. Dropsy of the pericardium to a small extent is a frequent occurrence in the latter stages of acute diseases attended with great disturbance of the circulating system, such as consumption, bronchitis, and pleurisy.

The diagnosis of hydropericardium has always been reckoned difficult. The general signs set down in books for our guidance are, an intermittent and irregular pulse, with an unusual *oppression* at the heart, palpitation, and that kind of paleness and anxiety of countenance observable when the heart labours exceedingly in its functions. The early appearance of œdema of the face has been also adduced as indicating dropsy of the pericardium. Neither percussion nor auscultation afford much assistance in the diagnosis of hydropericardium. The dull sound indicated by the former is equally present, whether the heart be enlarged, or the bag of the pericardium distended by fluid. The sensation communicated by the ear is described as being that of an impulse transmitted through a fluid. Even this is not discernible, unless the quantity of effusion amounts to about a pint.

Treatment of thoracic dropsy.—The only peculiarity worthy of note is, that here the influence of diuretic medicines is more decided than in any other form of dropsy, and that digitalis is of all others the most generally successful. The infusion, beginning with the dose of three drachms three times a day, and gradually augmenting it to six, is upon the whole the best form. It may be advantageously united with aromatics, and other diuretics, as in the following form:—

℞ Infusi digitalis, ℥iv.
Aquæ cinnamomi, ʒv.
Potassæ acetatis, ℈j.
Spt. ætheris nitrosi,
—— juniperi compos. *sing.* ʒj. Misce.
Fiat haustus sextis horis repetendus.

Paracentesis thoracis.—This measure is well adapted for cases where effusion into one cavity of the chest has resulted from acute pleurisy; but even here it must be practised with caution, as the powers of the system are adequate to the absorption of a very large quantity of fluid. In the common form of hydrothorax, where it is associated with anasarca, and organic affections of the lungs and heart, the operation can hardly be recommended on theoretical principles. The very occurrence of the disease denotes that the constitution is worn out, or, at least, the principal organs of the body injured to a degree which scarcely admits of repair. The operation, therefore, under these circumstances, is very rarely practised. Whether, in giving temporary relief to the breathing, it is calculated to bring any new danger on the patient, is a question which long experience will be required to ascertain.

V. ANASARCA.

The cellular membrane, so extensively diffused throughout the body, is moistened by a fluid thrown out by its arterial exhalants. In various ways the quantity of this fluid may be increased, constituting the disease called anasarca. The *pathognomonic* symptom of it is the pitting of the skin on pressure. The affection usually commences in the feet and legs, perceptible perhaps at night only. As the disease advances, the swelling becomes general over the body. The skin is dry and parched. There is a peculiar sallowness of countenance to be observed, with torpor, and disposition to sleep. In severe cases the cuticle gives way, and serum oozes through the pores of the skin. When the *habit* of body is bad, erysipelatous inflammation and gangrene are apt to follow. In worn-out debilitated constitutions, it is not uncommon to find anasarca associated with petechiæ and ecchymoses.

Remote causes.—Pathologists in all ages have occupied themselves in enumerating the several causes from which anasarca may originate. Without following them into details, it may be useful to point out those which are most frequently observed to operate.

1. Local anasarca, or œdema, sometimes arises from pressure accidentally made on veins, as by the gravid uterus, swelled glands in the groin or armpits, or a tight garter. The same result occasionally follows, even in healthy states of the system, from a too long continuance in the erect posture.

2. General anasarca arises from a variety of causes which concur in producing a debilitated state of the whole body, and more particularly perhaps of the venous system. Hence it is that anasarca succeeds severe hæmorrhagies (natural or artificial), fevers, and fluxes; and that it occurs so frequently in the latter stages of diabetes, phthisis pulmonalis, and amenorrhœa. Under such circumstances the dropsical symptoms commence slowly, and as it were *imperceptibly*. There are instances, however, in which the disease comes on suddenly; and to the causes of this *acute* form of anasarca I shall next advert.

3. Exposure to cold and damp has frequently been followed by dropsical swellings. I have known them to commence within forty-eight hours from the application of the exciting cause. In this variety of the disease the pulse will commonly be found full and strong, with perhaps some degree of hardness. There will be present at the same time symptoms denoting an affection of the thoracic organs—tightness across the chest, with cough and dyspnœa, aggravated by exertion and the recumbent posture, and producing *headache*.

4. General anasarca arises, in the fourth place, from excess in the use of spirituous liquors. When the attack is sudden, this dropsy is of the *arterial* kind, and attended with the symptoms just described as accompanying hydropic effusion from cold.

5. Another cause of anasarca is disturbance in the uterine functions. I have already had occasion to notice, that amenorrhœa exhibits itself in two different habits of body, and is accompanied by two opposite trains of symptoms. The dropsy which attends this state of disease is sometimes of the true *atonic* kind, but occasionally it is observed along with an *incompressible* pulse, hæmorrhages from the nose and stomach, apoplectic symptoms, and others denoting plethora and increased arterial action.

6. The next circumstance requiring attention in the pathology of anasarca, is its connection with some of the febrile eruptions. It has long been known, that dropsy, particularly in the form of anasarca, occasionally follows scarlet fever. The same phenomenon is sometimes observed as a sequel of measles, small-pox, and erysipelas. It has been conjectured, that the dropsical tendency is here dependent on a morbid condition of the *cutaneous exhalants*, the consequence of the eruption; and there are sufficient grounds for this notion. The accompanying symptoms occasionally point out some obscure affection of the heart and lungs existing at the same time.

7. Besides these general causes of anasarca, the student will remember that it is a frequent occurrence in the latter stages of enlarged heart, whether with or without increase in the bulk of its parietes. In these and many other cases, dropsy of the cellular membrane is accompanied with hydropericardium, hydrothorax, or œdema of the lungs; and the same remedies are applicable to them all.

Treatment of Anasarca.—Blood-letting is better adapted for anasarca than for any other variety of dropsy. Where it occurs suddenly from exposure to cold, or excess in the use of spirits, venesection is often not only useful, but actually indispensable. The blood drawn is sometimes cupped and buffy, but more commonly it will have the appearance (hardly, however, less satisfactory) of great firmness of coagulum. The effects of blood-letting will be materially aided by the employment of purgatives, saline and antimonial medicines, and the relaxant diuretics, especially digitalis, nitre, and the acetate of potash. The student will of course understand, that neither these nor any other diuretic medicines are likely to be of service without very copious dilution, and nothing answers this end so effectually as lukewarm barley water. There cannot be a greater error than to imagine that dropsical accumulations may be lessened by *withholding* liquids.

It is unnecessary to say that this plan of treatment is adapted only to one variety of anasarca. In all cases, the practitioner, by tracing the origin of the disease, and weighing accurately the accompanying symptoms, must form for himself some idea of its *proximate cause*. He will thus occasionally find the necessity of *supporting* the system, instead of lowering it; and to effect this, he will have recourse to the use of tonics (bark, camphor, bitters, and aromatics) in combination with diuretics.

Considerable diversity of opinion has prevailed regarding the propriety of scarifications in anasarca. By some they are utterly condemned, as leading to erysipelatous inflammation and gangrene, while in the hands of others they have proved eminently serviceable. This may partly be attributed to differences in the mode of operating. It cannot, however, be denied, that in languid habits of body, scarifications are occasionally dangerous. The relief which they afford, however, is often surprisingly great, and compensates the degree of risk which they bring with them.

Blisters and issues have been recommended in the cure of anasarca, but they are not advisable. Frictions, oil-skin stockings, and bandages, are useful where the effusion of serum arises from local obstructions; but they are unimportant in that more numerous class of cases, in which dropsy of the cellular membrane is associated with a disposition to effusion in the s [illegible] membranes of the thorax or abdomen.

CLASS X.

CHRONIC CUTANEOUS DISEASES.

CHAP. I.

PATHOLOGY OF CUTANEOUS DISEASES.

Outline of their Pathology. Causes operating generally in the production of Chronic Cutaneous Diseases. Causes operating locally. General System of Treatment. Division of Affections of the Skin into constitutional and local. General Character of the Remedies employed.

A GREAT variety of affections are comprehended under the head of *chronic cutaneous diseases.* Expanded as they have been by some authors into a nosological system, and each made the subject of distinct investigation, it may appear impossible, consistently with the design of this work, to enter upon a discussion of them with any prospect of advantage to the student. I am indeed fully sensible, that in acquiring a knowledge of these affections, attention to detail is requisite. Still it behoves the student to be aware, that there are certain general principles which connect all the chronic diseases of the skin together, and link them in with the great chain of constitutional disorders. To point out these, although in a very summary manner, may possibly be useful. I shall attempt further to direct the attention of the reader to the leading *natural* divisions of chronic cutaneous disease, hoping thus to lay before him the elements of a study which the detailed descriptions of authors may hereafter assist him in pursuing, but a complete knowledge of which can alone be attained by constant attention, and extensive opportunities of observation.*

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* We have two works in our own language expressly dedicated to cutaneous affections, *viz.*—Bateman's *Practical Synopsis of Cutaneous Diseases*, and Plumbe's *Practical Treatise on Diseases of the Skin.* The student will also consult with great advantage Rayer's *Treatise on Diseases of the Skin*, translated by Mr. Dickinson. London, 1833.

Causes.—Considering the diversity in the aspects of chronic cutaneous disease, there is less variety than might have been expected in their *exciting causes.* They may be distinguished into such as operate *generally*, and such as act through the medium of the skin itself.

1. In the first class may be ranked the presence of a poison in the system. This is very often the poison of lues, which, in common with other secondary effects, produces every possible variety of *cutaneous* disease. At other times, the poison is that of mercury. Hence it is that cutaneous eruptions constitute so important a part of that complaint to which modern pathologists have given the title of pseudo-syphilis. Sometimes the poison is of a more familiar kind, such as shell-fish, bitter almonds, and other indigestible articles of diet, the influence of which, however, is only partial and transitory.

2. The next source of cutaneous disease is simple *debility*. To this we attribute the cutaneous eruptions bearing the character of *ecthyma* and *rupia*, which are observed in persons convalescent from tedious diseases, very remarkably in those of a naturally scrophulous habit, who are recovering from confluent small-pox. Closely allied to it is the state of *cachexia*, the consequence of bad food, want of air and exercise, and irregular modes of living. It has been conjectured, that in these cases the *blood* becomes altered in its qualities, and probably loaded with saline particles, which, irritating the cutaneous capillaries, produce different varieties of eruption. This doctrine of the old pathologists, although but little talked of in modern times, still preserves its influence on practice, as will be apparent by considering the extensive use now made of the alterative vegetable decoctions, the principal effect of which is to improve or *sweeten* the condition of the blood.

3. A weakened or cachectic state of the system is not, however, the only one in which chronic cutaneous disease occurs. In some instances a degree of plethora is present. In the language of the humoral pathologists, the blood is too rich, and stimulates too strongly the vessels through which it passes. This is particularly observable in the pustular eruptions to which young persons are subject about the period of puberty, constituting the *acne simplex* and *punctata* of Willan.

4. A disordered state of the stomach and bowels is one of the most common causes of chronic cutaneous disease. Some-

times this consists merely in the lodgment of crudities in the alimentary canal. At other times, the presence of acid in the stomach appears to be the direct occasion of the cutaneous affection. Hence the use of purgatives and of absorbents in the chronic diseases of the skin.

5. Chronic cutaneous disease is sometimes observed in combination with symptoms denoting disorder of the thoracic viscera. I have already had occasion to illustrate this pathological principle when treating of the hæmorrhœa petechialis, or purpura. Lichenous eruptions sometimes accompany an hepatized state of the lungs.

6. Cutaneous disease appears to depend in some instances upon the mere circumstance of advanced age. Many old people suffer severely from pruriginous affections, depending probably upon some change which the texture of the skin undergoes as life advances.

Besides these *general* sources of cutaneous affections, there are others whose influence is very extensive, which may be referred more immediately to the skin itself.

1. The first I shall notice is a peculiar *irritability*, or delicacy, of the skin. This is the probable cause of those numerous cases of *strophulus* which occur in infants, whose skin is as yet unaccustomed to the stimulus of air and soap. This irritable state of the skin often exists through life; and hence it is that leeches and blisters produce in such habits very unpleasant effects. The principle appears to be one of very general application in the pathology of cutaneous complaints. In some instances it would appear that such a peculiarity of the surface descends from parents to their offspring. Lepra and Icthyosis afford the most remarkable examples of the hereditary transmission of cutaneous disorder.

2. The next cause of chronic cutaneous disease which requires attention, is want of cleanliness. It is doubtless on this account that obstinate cutaneous affections are so much more common among the lower than the higher classes of society. Hence, too, the great value of warm ablution in their treatment.

3. The third is local irritation. Its influence in the production of cutaneous disease is generally acknowledged, and is indeed very extensive. The principle is fully shown in the common effects of blisters, plaisters, and antimonial lotions;

but it is chiefly exemplified in those eruptions which follow the long-continued stimulus of the sun's rays, of flour, sugar, lime, or soap, constituting some of the species of eczema and psoriasis.

4. The last source of chronic cutaneous disease which I shall notice is contagion. There are not many cases, however, to which it applies. Psora and tinea capitis are perhaps the only unequivocal proofs of it which can be adduced.

Treatment.—In laying down a few general principles applicable to the treatment of these affections, I must first advert to the necessity of distinguishing them according as they are constitutional or local. Chronic cutaneous diseases may, in fact, be divided into two classes, such as implicate the constitution to a greater or less degree,—and such as are decidedly local, arising from local causes, remediable by local means, and in the ordinary course of events not influencing the system at any period of their progress. There is a foundation in nature for this distinction; but in other respects these two classes of diseases are too intimately connected to make it possible to discuss them separately. In practice, however, it must be remembered, that where the disease is essentially local, topical remedies are required. On the other hand, where the constitution is in fault, local measures are of little or no avail. It is true, that in the treatment of the latter kinds of cutaneous disease we are often glad to have recourse to local means (even though their influence be but insignificant), for a large proportion of such affections are unaccountably obstinate.

Of those kinds of cutaneous disease which are connected with constitutional disturbance, many are set up by nature as a relief to internal disorder, and their *cure* would often be followed by some serious mischief. Thus the crusta lactea of infants suddenly suppressed has been succeeded by hydrocephalus; the psoriasis of elderly persons, by apoplexy; the drying up of an old ulcer, by a paroxysm of asthma. In connection with this subject, we may mention also the curious but well-ascertained fact, that very obstinate cutaneous diseases have sometimes been removed in the course of a fever. Warts and scaly diseases of the skin, which had resisted all remedies, have, especially, yielded in this manner.

In the treatment of cutaneous affections, the condition of the general system is first to be looked to; and according as a state of fever, of cachexia, of debility, or plethora, be present, remedies are to be employed of a febrifuge, alterative, tonic, or evacuant quality. Attention is to be paid, in the second place, to the functions of the stomach and the bowels, and any irregularities in them corrected by appropriate means. Lastly, the condition of the skin is to be carefully examined, with a view to determine whether the superficial vessels are *irritable*, requiring *soothing* medicines, or in that state of *torpor* which will be benefited by *stimulating* applications.

The constitutional remedies applicable in cases of chronic cutaneous disease, are purgatives, absorbents, tonics, alteratives, febrifuges, and lastly, such medicines as exert a peculiar effect upon the vessels of the skin. This class of drugs will naturally be resorted to whenever we fail in detecting some obvious cause for the complaint; and they ought frequently to be varied until we find one that fulfils our expectations. Those which experience has shown to be the most efficacious are, dulcamara, sulphur, pitch, mercury, antimony, and arsenic.

The local applications employed in cutaneous diseases are divisible into three kinds;—the mild, the cooling, and the irritating. To the first belong cold cream, pomatum, simple ointment, poultices either of linseed meal or of bread, and the vapour of warm water. To the second, lotions of goulard, of vinegar, of the muriate of ammonia, and the ointments of zinc and of sugar of lead. Of the irritating applications, the variety is infinite. Those in most general use are citrine ointment, sulphur ointment, the decoction of white hellebore, spirituous lotions, and lotions containing either lunar caustic or corrosive muriate.

There is still another class of remedies employed in the treatment of chronic cutaneous complaints, which may be considered to possess a double influence; that is to say, to act both generally and locally. Of this kind are sulphureous baths, mineral waters, and the warm and cold sea-water bath.

CHAP. II.

CHRONIC AFFECTIONS OF THE SKIN.

Willan's Classification. Arrangement of Mr. Plumbe. Notice of the leading varieties of Chronic Cutaneous Diseases. ORDER I. *Strophulus. Acne. Tinea Capitis. Psora.* ORDER II. *Lepra. Psoriasis. Icthyosis.* ORDER III. *Eczema. Porrigo. Prurigo. Impetigo.* ORDER IV. *Pompholyx. Ecthyma and Rupia.*

DR. WILLAN divided cutaneous diseases into eight orders, according to the appearance of the eruption in its most perfect state. This classification is now so generally adopted in this country, that it may be useful to the student to place it before him. He will perceive that many of the diseases arranged by Willan as cutaneous have been already discussed either as febrile or as constitutional disorders.

ORDER I.—PAPULÆ.

1. STROPHULUS.
2. LICHEN.
3. PRURIGO.

ORDER II.—SQUAMÆ.

4. LEPRA.
5. PSORIASIS.
6. PITYRIASIS.
7. ICTHYOSIS.

ORDER III.—EXANTHEMATA.

8. RUBEOLA.
9. SCARLATINA.
10. URTICARIA.
11. ROSEOLA.
12. PURPURA.
13. ERYTHEMA.

ORDER IV.—BULLÆ.

14. ERYSIPELAS.
15. PEMPHIGUS.
16. POMPHOLYX.

ORDER V.—PUSTULÆ.

17. IMPETIGO.
18. PORRIGO.
19. ECTHYMA.
20. VARIOLA.
21. SCABIES.

ORDER VI.—VESICULÆ.

22. VARICELLA.
23. VACCINIA.
24. HERPES.
25. RUPIA.
26. MILIARIA.
27. ECZEMA.
28. APHTHA.

ORDER VII.—TUBERCULA.

29. PHYMA.
30. VERRUCA.
31. MOLLUSCUM.
32. VITILIGO.
33. ACNE.
34. SYCOSIS.
35. LUPUS.
36. ELEPHANTIASIS.
37. FRAMBŒSIA.

ORDER VIII.—MACULÆ

CONGENITAL MARKS.

38. EPHELIS.
39. NÆVUS.
40. SPILUS.

I have already (page 103) had occasion to express my distrust of some of the principles on which this classification is founded; and as it is clearly inapplicable to our purpose, I shall avail myself of a different arrangement, suggested in a great degree by that of Mr. Plumbe.* It has the merit of resting on principles strictly pathological, and is well calculated, therefore, for elementary instruction. The exclusion of the febrile exanthemata equally fits it for our purpose. It distributes chronic cutaneous diseases into four orders.

Order 1. Diseases strictly local, deriving their characters from local peculiarities of the skin. Strophulus. Acne. Sycosis. Tinea capitis, or Porrigo scutulata. Psora, or Scabies.

Order 2. Diseases marked by chronic inflammatory action of the vessels forming the cuticle, producing morbid growth of that structure; constitutional causes or influence uncertain. Lepra. Psoriasis. Icthyosis.

Order 3. Diseases having a decidedly constitutional origin, and characterized, in their progress, by local and constitutional excitement. Eczema. Porrigo. Prurigo. Impetigo.

Order 4. Diseases dependent on debilitated states of the constitution, and characterized by diminished tone of the vessels of the cutis. Pompholyx. Ecthyma. Rupia.

On these several genera of cutaneous disease I shall now offer a few remarks, referring the student to the works already quoted for such *detailed* information concerning them as may complete his knowledge of this very necessary branch of medical literature.

I. STROPHULUS.

This is the earliest form of chronic cutaneous disease ever observed. It comprises several papular affections peculiar to infants, and known by the name of *red gum* and *tooth rash*. The affection is attributable to the very vascular and irritable condition of the skin in infantine life, and is in some cases, perhaps, connected with indigestion. In its ordinary form, however, it is consistent with a state of perfect health, and requires little, if any, medical treatment.

II. ACNE.

This disorder consists essentially, in its original form, of simple obstruction to the free passage of the sebaceous matter to the surface of the skin; in consequence of which, that substance accumulates, hardens, distends the follicles which contain it, and ultimately causes inflammation and small abscesses. It is a very frequent complaint from the age of puberty to the twenty-fifth year of life. It is characterized by an eruption of papulæ in the face (especially on the forehead and chin), as well as on the neck, shoulders, and breast. It never descends to the lower part of the trunk, or to the extremities. It is common to both sexes, but the most severe cases of it are seen in young men. Persons labouring under it enjoy, for the most part, good general health, and are often unable to refer the complaint to any obvious exciting cause. The eruption occasionally recedes for a time, but recurs, more especially after violent exercise, great heat of the weather, a more liberal use of wine, or any unusual excitement of the cutaneous circulation. Except in females this complaint seldom calls for the attention of medical men. It is altogether a local disease, and neither requires nor is benefited by a low diet, purgatives, alteratives, or other internal medicines. At the same time it is to be remarked, that external applications are equally without influence. The disease, therefore, usually proceeds to its natural but distant termination. SYCOSIS is nothing more than acne occurring in parts covered by hair, especially the chin.

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* Plumbe's "Practical Treatise." London, 1824.

III. TINEA CAPITIS.

This (the porrigo scutulata of Willan), commonly called ringworm of the scalp, or *scald head*, is an affection of a very peculiar kind. Its leading feature is the falling-off of the hair, arising (according to Mr. Plumbe, who has paid great attention to this subject) from excessive excitement of the vessels of the scalp, which deprives the structure secreting the hair of its due nourishment. It undoubtedly originates in the application of an infectious matter, and spreads by the secretion of the pustules which are formed. It is a singularly obstinate complaint, and resists, in many cases, for a great length of time, the best directed exertions of medical art. The treatment consists in keeping the hair close cut, lessening the cuticular action by lotions of the sulphate of zinc, carefully washing away the matter that has formed, and subsequently stimulating the affected parts. Lotions of the sulphate of copper, and of lunar caustic, the ung. hydr. nit. and the ung. hydr. præcip. albi are the applications generally resorted to for this latter object. Internal remedies are not required, except to allay constitutional irritations which may *accidentally* have arisen.

IV. PSORA, OR SCABIES.

The troublesome complaint so well known under the familiar denomination of *the itch*, usually assumes the form of small vesicles intermixed with pustules; but its aspects are very various and deceitful. It may at all times, however, be distinguished by the incessant and importunate itching which attends it, the constitution being perfectly unaffected. It appears occasionally on every part of the body, the face alone excepted. Its most usual seat is about the wrists and fingers, the fossa of the nates, and flexures of the joints. The itch is highly contagious. There is every reason to believe that it consists essentially in the presence of a minute insect burrowing and breeding in the skin. This insect was first accurately described by Bonomo, in 1683, and is now called the acarus scabiei.* To this, as to all other insects, sulphur is a complete poison, and, therefore, beyond all other remedies, entitled to the character of a *specific*. There are few cases of *genuine* scabies which will not yield to the steady employment of the sulphur ointment. Five or six applications, assiduously made, are usually sufficient to effect the cure. The patient should be directed to sleep in blankets during the progress of the cure. In very obstinate cases, the compound sulphur ointment (containing the white hellebore) may be substituted with advantage.

V. LEPRA.

This is the most common, the most obstinate, and, upon the whole, the most formidable of all the varieties of chronic cutaneous disease. In its simple form it is recognised by its circular patches, about the size of a half-crown piece, covered with small shining scales, encircled by a dry, red, and slightly elevated but well-defined border. It occurs at all periods of life, and under every variety of external circumstance. Except when very severe, it is not attended with uneasiness in the part, and hardly ever with constitutional disturbance. The pathology and treatment of lepra have long been the opprobria of physic. In some cases an hereditary origin may be traced; but beyond this little is known regarding its causes. Females are certainly more subject to this disorder than males, and the periods of commencement and cessation of the menstrual discharge are those during which it chiefly shows itself. The system of treatment in lepra is quite empirical. Dulcamara is perhaps the only remedy which practitioners have agreed in recommending, and yet its influence is often slight, and seldom permanent. Moderate doses of the oxymuriate of mercury (such as half a drachm of the liq. hydr. oxym. repeated twice a day) have sometimes proved efficacious. Arsenic has been strongly recommended. The Bath waters externally applied are in great esteem throughout England, and to a certain degree have established their claim as a remedy of power.

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* See London Medical Gazette, vol. xv. page 29.

VI. PSORIASIS.

This form of cutaneous disease is closely allied to lepra, both in its appearance and general pathology. It chiefly differs from lepra in the *irregular* shape of the patches, and their being frequently accompanied by *rhagades*, or fissures of the skin. Psoriasis is to be treated on the same principles as lepra, but its cure is equally precarious and difficult. It is sometimes benefited by the application of dilute citrine ointment, and some advantage may be derived from the internal use of sulphur combined with the carbonate of soda; but, like lepra, it often continues, recurring perhaps at intervals through the whole course of life, notwithstanding every effort of medical art.

VII. ICTHYOSIS.

This disease is characterized by a thickened, hard, rough, scaly, and, in some cases, an almost horny texture of the integuments of the body, either generally or in patches. In its early stages the skin appears dirty; when further advanced the colour of the skin becomes nearly black. The disease often proceeds to such an extent as to occasion great deformity. The constitution, however, is in no degree affected by it, nor is it attended by any evidences of increased excitement of the cutaneous vessels. Icthyosis is often manifestly hereditary, and to be considered rather as an original malformation, than as actual disease. Several instances of hereditary icthyosis have been recorded. The most celebrated is that of Edward Lambert and his descendants, called the Porcupine Family, described in the Philosophical Transactions.* Mr. Martin, of Pulborough in Sussex, has detailed the history of a mother and child, of the name of Holden, affected in like manner.† Dr. Girdlestone reports an instance of icthyosis appearing in three successive generations.‡

This disease is scarcely under the control of medicine. Pitch pills have been stated to be of use, and a trial of arsenic has been advised. Dr. Elliotson recommends the warm bath, followed by a free use of olive oil to the surface.§

VIII. ECZEMA.

The complaint described under this title is characterized by a diffused eruption of vesicles without inflammatory bases. It has for its local causes the direct rays of the sun (eczema solare), and for its constitutional causes the irritation of mercury in habits peculiarly predisposed (eczema mercuriale). The *quantity* of mercury taken seems to be of secondary importance. The most violent and extensive case of eczema mercuriale I ever saw was brought on by a few grains of blue pill. A slight degree of feverishness attends this complaint. Its duration is very uncertain, seldom continuing longer than a month. Mild saline aperients, a spare diet, soft sponging of the affected parts, and occasionally a warm bath, appear to comprise all that is important in reference to treatment.

IX. PORRIGO FAVOSA.

Under this title Dr. Willan has described a very familiar form of chronic cutaneous disease, which chiefly affects children from the period of dentition up to the fourth or fifth year of life. It is characterized by an eruption of straw-coloured pustules, scattered at times over the whole body, principally however observable on the scalp, the face, behind the ears, and about the ancles. A porriginous state of the *scalp* frequently accompanies the process of dentition, and is then perhaps rather salutary than otherwise. By neglect, this disease assumes a most frightful aspect. The pustules discharge a viscid fluid, which concretes into scabs, and the face (when that part is attacked) becomes enveloped in a mask, constituting the *crusta lactea* of old authors, the *porrigo larvalis* of Willan. Porriginous eruptions occur in different states of the system. They are, I believe, chiefly attributable to a *gross* diet, and connected with plethora; but at times they arise in feeble and flabby habits, and appear in combination with cachexia and marasmus. The treatment of this form of disease must be regulated by the varying circumstances under which it occurs. In general, purgatives are indispensable; and the combination of scammony and calomel is well adapted to the class of children among whom it chiefly prevails.

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* Vol. 49. See also Lond. Med. Gazette, vol. xi. p. 345.
† Medico-Chirurgical Transactions, vol. ix. page 52.
‡ Medical and Physical Journal, vol. viii.
§ Lond. Med. Gazette, vol. xi. p. 345.

X. PRURIGO.

Prurigo is a papular disease of a more chronic nature than porrigo, and it is distinguished by the excessive, the uncontrollable itching which attends it. The papulæ do not differ in colour from that of the adjoining cuticle, and hence are often overlooked by superficial observers. This disease differs from psora in the circumstance of its never advancing to vesicle or pustule. Prurigo in some cases affects the whole surface of the body: at other times it is *partial*, the generative organs and the back being its most usual seats. It often proves to elderly persons a most formidable ailment, interfering with every enjoyment of life. The pathology of pruriginous affections is very obscure. They are sometimes connected with general debility and visceral obstructions, at other times with richness of blood, and a preternaturally excited state of the cutaneous capillaries. Cleanliness and the warm bath are the most important remedial measures; but the occasional use of purgatives should never be omitted. Lotions containing vinegar afford some relief. Mercury also is occasionally useful. In all complaints, however, characterized by itching, sulphureous medicines are, upon the whole, the most generally serviceable. The sulphur vapour bath has often effected a cure. The Harrowgate waters have, on the same principle, long enjoyed a celebrity for the cure of this disorder. Lotions containing sulphuric acid in a state of great dilution are also serviceable; such as—

℞ Acidi sulphurici diluti, ʒij.
Aquæ, Oj. Misce.
Fiat lotio.

XI. IMPETIGO.

This severe form of cutaneous disease exhibits considerable diversity of external character. Vesicles, pustules, and regularly formed scales, may be observed at different periods of its progress; but it is at all times distinguishable by the violent cutaneous irritation which accompanies it. High inflammatory action, extensive pustulation and scabbing, with deep fissures or *rhagades*, are its leading features. These are of course succeeded by a proportionate degree of relaxation in the vessels of the affected part. The causes of impetigo are very little known, and its treatment therefore is uncertain. Frequent ablution, gentle alteratives, and the sulphur vapour bath, have occasionally proved serviceable. Blood-letting is required in severe cases, when the habit of the patient admits of it.

XII. POMPHOLYX

is characterized by the eruption of *bullæ*, or vesicles of the size of walnuts, which appear in successive crops, occupying different parts of the body, but more especially the extremities. This disease is not usually attended by febrile symptoms. The febrile vesicular eruption, to which nosologists have given the name of *pemphigus*, is nothing more than pompholyx with fever accidentally combined with it. Pompholyx frequently proves very tedious, lasting from six weeks to three or four months, and is peculiarly obstinate and severe in old people. It produces in them great itching and inconvenience; and from the extent of surface occupied by the eruption, and the occasional intermixture of livid vesicles, presents on some occasions a very formidable aspect. Pompholyx, however, is certainly to be considered a rare form of cutaneous disease. It appears to depend upon some *cachectic* (by which is understood a depraved and debilitated) state of the whole system. Medicine, as far as I can judge from my own limited observation, exerts very little power over it. Tonic and alterative medicines appear to be called for, with a generous diet, and an allowance of wine. The irritation of the skin admits of some relief from the use of the following lotion:—

℞ Plumbi acetatis,
Camphoræ, *sing.* ʒss.
Aquæ ferventis, Oij.
Misce, et liquorem frigefactum cola. Fiat lotio.

XIII. ECTHYMA, AND RUPIA.

These terms are applied to designate the different grades of that *pustular* eruption which occurs in debilitated habits. The system being weak, the vessels of the skin easily give way, either spontaneously or from very slight causes, and there is not sufficient energy in the constitution to repair the injury. Obstinate ulcers, secreting an imperfect pus, or ichor, with scabs resembling limpet shells (the true rupia), follow. Such a diseased state of the surface is very common in scrophulous persons of all ages after severe small-pox, and is occasionally observed in children succeeding measles. The disease is met with also in young persons, who, with constitutions not originally strong, imprudently indulge in great excesses and irregularities. It frequently appears in the first instance upon the legs, but extends in course of time to every part of the body, proving, in very many cases, exceedingly tedious and obstinate. The appropriate treatment consists in change of air, cold bathing, and the internal use of sarsaparilla, bark, and other alteratives and tonics.

CHAP. III.

ELEPHANTIASIS.

Character of the two diseases described under this name. Of the Elephantiasis Græcorum, or tuberculata. Of the Elephantiasis Arabum, or Barbadoes Leg. Their Symptoms, Causes, and Treatment.

UNDER this title are comprehended two diseases, occurring in hot climates, but of different pathological characters. The one is a tubercular affection of the skin, chiefly affecting the face and upper parts of the body. From having been originally described by Aretæus, it is called Elephantiasis Græcorum. Its proper designation is Elephantiasis tuberculata. The other is primarily an affection of the subcutaneous cellular membrane, chiefly affecting the leg, whence is derived its familiar name of the Barbadoes leg. From having been originally described by Rhazes, it has received the appellation of Elephantiasis Arabum. To avoid ambiguity, these complaints must be considered distinct from each other, and from the cutaneous diseases already noticed.

ELEPHANTIASIS GRÆCORUM, OR TUBERCULATA.

This disease consists in numerous flattened glossy tubercles, of a reddish colour, and of variable sizes, from a split pea to that of a large nut, occupying chiefly the face, ears, and limbs, sometimes, although rarely, extending to the trunk of the body. As the disease advances, some of the tubercles crack and ulcerate. On the extremities, from the accompanying languor of the circulation, gangrene has been known to take place. Nothing can be conceived more hideous than the aspect of the body under an aggravated degree of tubercular elephantiasis. In the early periods of the disease, the constitution does not sympathize. At a later period, the mind becomes depressed and melancholy, the general health gives way, and the patient slowly and miserably sinks, generally from supervening bronchial inflammation.

Tubercular elephantiasis occurs chiefly in hot climates. The East Indies afford numerous instances of it. It has been seen in this country, and we are indebted to Mr. Lawrence for the details of a case observed by him in 1814.* The pellagra of Italy is closely allied to it.† It has for its proximate cause a cachectic habit of body, the result of unwholesome diet, want of cleanliness, and damp air. It is strongly suspected to be hereditary.

The disease is almost incurable. Tepid baths, soothing applications, and vegetable alteratives, such as sarsaparilla and guaiacum, with a nourishing diet, are recommended. Mercury is considered as pernicious. Dr. T. Heberden has recorded a case cured by bark.‡ Arsenic has also been found useful. Every thing seems to show that the disorder is intimately connected with languid circulation, and deficient vitality. A tonic plan of diet and medicine seems therefore indicated.§ In the Medico-Chirurgical Transactions,|| there is an account, by

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* Medico-Chirurgical Transactions, vol. vi.

† Ibid. vol. viii. p. 1. Dr. Holland on "The Pellagra of Lombardy."

‡ Transactions of the London College of Physicians, vol. i. p. 23.

§ Ibid. vol. v. p. 297.

|| Vol. x. p. 27.

Mr. Robinson, of a particular variety of elephantiasis observed in Hindostan, in which the mudar, or bark of the root of the asclepias gigantea, is eminently serviceable. Its presumed virtues are deobstruent, diaphoretic, and alterative.

ELEPHANTIASIS ARABUM, OR BARBADOES LEG.

This disease is common in the West Indies, in Ceylon, in the peninsula of India, on the shores of the Red Sea, and in the islands of the Pacific Ocean. It chiefly affects the leg, but sometimes also the arms and scrotum. It is an inflammatory affection of the subcutaneous cellular tissue, setting in with rigors, headache, and other evidences of acute pyrexia. The leg becomes red, hot, swelled and painful. By degrees the constitutional symptoms recede, but the leg remains tumefied. A succession of such attacks induces at length that excessive enlargement of the limb from which the disease has derived its name.

On examination after death the cellular membrane appears hard, dense, and interspersed with small cells filled with serous fluid. The aponeurotic and other fibrous structures often participate in the disease, and in severe cases the cutis vera is implicated. The skin appears rough, scaly, tuberculated, and fissured.

Nothing is known regarding the remote causes of this peculiar affection of the cellular membrane. It is endemic in certain districts, and must depend therefore on some state of the air and soil peculiar to those localities, the precise nature of which is probably inscrutable. It has for its proximate cause the same condition of vessels which leads in this country to the phlegmasia dolens.

The treatment of it consists in the employment of purgatives and mercurials, with confinement to bed, during the early stages. In the chronic form of the disease, medicine can do but little. Compression of the tumid limb has been practised with some degree of success. Iodine deserves a trial.

APPENDIX.

FORMULÆ MEDICAMENTORUM.

I. MEDICAMENTA PURGANTIA.*

No. 1. ℞ Pulveris jalapæ, ℈j.
Supertartratis potassæ, ʒj.
Pulveris aromatici, gr. iij. Misce.
Fiat pulvis catharticus.

No. 2. ℞ Pulveris rhei, ℈j.
Potassæ sulphatis, gr. xv.
Aquæ menthæ piperitæ, ℥iss. Misce.
Fiat haustus aperiens.

No. 3. ℞ Pulv. rhei, ℈j.
Confect. arom. gr. xv.
Aquæ menthæ piperitæ, ʒxij. Misce.
Fiat haustus.

No. 4. ℞ Aquæ menthæ sativæ, ʒxij.
Magnesiæ sulphatis, ʒvi.
Conservæ rosæ, ʒj.
Acidi sulphurici diluti, ♏vj. Misce et cola.
Fiat haustus aperiens.

No. 5. ℞ Magnesiæ sulphatis, ʒij.
Infusi rosæ compositi, ʒix.
Syrupi aurantiorum, ʒj. Misce.
Fiat haustus aperiens.

No. 6. ℞ Infusi sennæ comp. ℥iiss.
——— gent. comp. ℥iij.
Liquoris potassæ, ʒj.
Tincturæ cardam. compos. ʒiij. Misce.
Sumat unciam bis die.

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* See page 56.

No. 7. ℞ Fructus tamarindi, ℥j.
Foliorum sennæ, ʒij.
Seminum coriandri, ʒss.
Sacchari, ℥ss.
Aquæ bullientis, ℥viij.
Macera in vase clauso, et post horas duas cola. Sumat cochlearia tria majora secunda quaque hora, donec alvus soluta sit.

No. 8. ℞ Confectionis sennæ, ℥j.
Sulphuris loti, ℥ss.
Syrupi tolutani, q. s.
Fiat electuarium, cujus sumat cochlearia duo minora pro dosi.

No. 9. ℞ Olei ricini, ℥ss.
Mucilaginis acaciæ, ʒij.
Aquæ pimentæ, ʒvj.
Syrupi, ʒi. Misce.
Fiat haustus.

No. 10. ℞ Olei ricini, ʒj.
Mannæ, ʒiij.
Pulveris acaciæ, gr. v.
Aquæ, ʒx. Misce.
Fiat haustus aperiens.

No. 11. ℞ Pil. hydrargyri,
Extracti rhei, *sing.* gr. xv.
Olei anthemidis guttas duas.
Divide in pilulas sex. Sumat unam nocte pro re nata.

No. 12. ℞ Pulveris myrrhæ,
——— rhei, *sing*, ℈ij.
Aloes socotr.
Extr. chamæmeli, *sing.* ʒss.
Olei anthemidis, ♏vj. Misce.
Divide in pilulas xxx. Sumat j vel ij hora somni.

No. 13. ℞ Magnesiæ carbonatis, ʒj.
Succi limonis, ʒiij.
Syrupi, ʒj.
Aquæ, ʒx. Misce.
Fiat haustus aperiens.

No. 14. ℞ Extracti colocynth. compos. ℈j.
Pil. rhei compos. (Pharm. Edin.) ℈ij. Misce.
Divide in pilulas xij. Sumat ij pro dosi.

II. MEDICAMENTA AMARA.*

No. 1. ℞ Decocti cinchonæ, ℥jss.
Extracti cinchonæ, gr. x.
Tincturæ cinchonæ, ʒj. Misce.
Fiat haustus.

No. 2. ℞ Quininæ sulphatis, gr. iij.
Acidi sulphurici aromatici, (Ph. Edin.) ♏x.
Infusi aurantii compositi, ʒx.
Tincturæ cinchonæ compositæ,
Syrupi zingiberis *sing.* ʒj. Misce.
Fiat haustus, bis indies adhibendus.

No. 3. ℞ Quininæ sulphatis, gr. j.
Misturæ camphoræ, ʒx.
Acidi sulphurici diluti, ♏iij.
Syrupi, ʒj. Misce.
Fiat haustus ter indies sumendus.

No. 4. ℞ Decocti cinchonæ, ʒx.
Pulveris cinchonæ, ℈j.
Tincturæ cardam. compos. ʒj.
Syrupi aurantiorum, ʒj. Misce.
Fiat haustus quartis horis repetendus.

No. 5. ℞ Infusi caryophyllorum, ʒx.
Quininæ sulphatis, gr. ij.
Tincturæ aurantii, ʒss.
Syrupi, ʒj. Misce.
Fiat haustus ter die sumendus.

No. 6. ℞ Infusi cuspariæ, ℥j.
Carbonatis ammoniæ, gr. iv.
Tincturæ cinnamomi compositæ, ʒj. Misce.
Sumat haustum ter die.

III. MEDICAMENTA EXPECTORANTIA.†

No. 1. ℞ Olei amygdalæ, ℥j.
Acaciæ gummi, ʒij.
Aquæ destillatæ, ℥vj.
Syrupi papaveris, ℥ss.

Tere oleum diligenter cum gummi, dein adde gradatim aquam, et syrupum.

Sumat cochl. j amplum frequenter indies.

---

* See page 87.

† See page 248.

No. 2. ℞ Cetacei, ʒij.
Vitellum ovi,
Syrupi althææ, ℥ss.
Aquæ cinnamomi, ℥j.
—— destillatæ, ℥iv. Misce.
Sumat cochleare unum amplum frequenter.

No. 3. ℞ Misturæ ammoniaci,
—— amygdalæ. *sing*. ʒiv.
Aceti scillæ, ʒj.
Tincturæ opii, ♏iv. Misce.
Fiat haustus quartą quaque hora sumendus.

IV. MEDICAMENTA DIURETICA.*

No. 1. ℞ Infusi cascarillæ, ʒviij.
Spt. juniperi compos.
—— ætheris nitrosi, *ana* ʒj.
Confectionis aromaticæ, gr. xv. Misce.
Fiat haustus, quinta quaque hora sumendus.

No. 2. ℞ Ammoniæ subcarbonatis, gr. viij.
Aceti scillæ, ʒij.
Tincturæ digitalis, ♏xx.
Aquæ pimentæ, ʒvj.
Syrupi zingiberis, ʒj. Misce.
Fiat haustus ter die sumendus.

No. 3. ℞ Extracti taraxaci, ℈j.
Tincturæ scillæ, ♏xx.
Spt. ætheris nitrosi, ʒj.
Aquæ carui, ʒix. Misce.
Fiat haustus sextis horis repetendus.

No. 4. ℞ Liquoris ammoniæ acetatis, ʒij.
Tincturæ digitalis,
Vini colchici, *sing*. ♏xv.
Misturæ camphoræ, ʒix.
Confectionis aromaticæ, ℈j. Misce.
Fiat haustus ter indies sumendus.

* See page 640.

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